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PROFESSOR CLARK'S ECONOMICS.

SUMMARY.

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For some time past economists have been looking with lively anticipation for such a comprehensive statement of Mr. Clark's doctrines as is now offered. The leading purpose of the present volume[1] is "to offer a brief and pro-

[1] The Essentials of Economic Theory, as Applied to Modern Problems of Industry and Public Policy. By John Bates Clark. New York: The Macmillan Company. 1907.

visional statement of the more general laws of progress"; altho it also comprises a more abridged restatement of the laws of "Economic Statics" already set forth in fuller form in his Distribution of Wealth. Tho brief, this treatise is to be taken as systematically complete, as including in due correlation all the "essentials" of Mr. Clark's theoretical system. As such, its publication is an event of unusual interest and consequence.

Mr. Clark's position among this generation of economists is a notable and commanding one. No serious student of economic theory will, or can afford to, forego a pretty full acquaintance with his development of doctrines. Nor will any such student avoid being greatly influenced by the position which Mr. Clark takes on any point of theory on which he may speak, and many look confidently to him for guidance where it is most needed. Very few of those interested in modern theory are under no obligations to him. He has, at the same time, in a singular degree the gift of engaging the affections as well as the attention of students in his field. Yet the critic is required to speak impersonally of Mr. Clark's work as a phase of current economic theory.

In more than one respect Mr. Clark's position among economists recalls the great figures in the science a hundred years ago. There is the same rigid grasp of the principles, the "essentials," out of which the broad theorems of the system follow in due sequence and correlation; and like the leaders of the classical era, while Mr. Clark is always a theoretician, never to be diverted into an inconsistent makeshift, he is moved by an alert and sympathetic interest in current practical problems. While his aim is a theoretical one, it is always with a view to the theory of current affairs; and his speculations are animated with a large human sympathy and an aggressive interest in the amelioration of the lot of man.

His relation to the ancient adepts of the science, however, is something more substantial than a resemblance only. He is, by spiritual consanguinity, a representative of that classical school of thought that dominated the science through the better part of the nineteenth century. This is peculiarly true of Mr. Clark, as contrasted with many of those contemporaries who have fought for the marginal-utility doctrines. Unlike these spokesmen of the Austrian wing, he has had the insight and courage to see the continuity between the classical position and his own, even where he advocates drastic changes in the classical body of doctrines. And altho his system of theory embodies substantially all that the consensus of theorists approves in the Austrian contributions to the science, yet he has arrived at his position on these heads not under the guidance of the Austrian school, but, avowedly, by an unbroken development out of the position given by the older generation of economists.[1] Again, in the matter of the psychological postulates of the science, he accepts a hedonism as simple, unaffected, and uncritical as that of Jevons or of James Mill. In this respect his work is as true to the canons of the classical school as the best work of the theoreticians of the Austrian observance. There is the like unhesitating appeal to the calculus of pleasure and pain as the indefeasible ground of action and solvent of perplexities, and there is the like readiness to reduce all phenomena to terms of a "normal," or "natural," scheme of life constructed on the basis of this hedonistic calculus. Even in the ready recourse to "conjectural history," to use Steuart's phrase, Mr. Clark's work is at one with both the early classical and the late (Jevons-Austrian) marginal-utility school. It has the virtues of both, coupled with the graver shortcomings of both. But, as his view exceeds theirs in breadth and gen-

[1] *Cf., e.g.*, Distribution of Wealth, p. 376, note.

erosity, so his system of theory is a more competent expression of current economic science than what is offered by the spokesmen of the Jevons-Austrian wing. It is as such, as a competent and consistent system of current economic theory, that it is here intended to discuss Mr. Clark's work, not as a body of doctrines peculiar to Mr. Clark or divergent from the main current.

Since hedonism came to rule economic science, the science has been in the main a theory of distribution,—distribution of ownership and of income. This is true both of the classical school and of those theorists who have taken an attitude of ostensible antagonism to the classical school. The exceptions to the rule are late and comparatively few, and they are not found among the economists who accept the hedonistic postulate as their point of departure. And, consistently with the spirit of hedonism, this theory of distribution has centered about a doctrine of exchange value (or price) and has worked out its scheme of (normal) distribution in terms of (normal) price. The normal economic community, upon which theoretical interest has converged, is a business community, which centers about the market, and whose scheme of life is a scheme of profit and loss. Even when some considerable attention is ostensibly devoted to theories of consumption and production, in these systems of doctrine the theories are constructed in terms of ownership, price, and acquisition, and so reduce themselves in substance to doctrines of distributive acquisition.[1] In this respect Mr. Clark's work is true to the received canons. The "Essentials of Economic Theory" are the essentials of the hedonistic theory of distribution, with sundry reflections on related topics. The scope of Mr. Clark's economics, indeed, is

[1] See, e.g., J. S. Mill, Political Economy, Book I.; Marshall, Principles of Economics, vol. i., Books II.-V.

even more closely limited by concepts of distribution than many others, since he persistently analyzes production in terms of value, and value is a concept of distribution.

As Mr. Clark justly observes (p. 4), "The primitive and general facts concerning industry . . . need to be known before the social facts can profitably be studied." In these early pages of the treatise, as in other works of its class, there is repeated reference to that more primitive and simple scheme of economic life out of which the modern complex scheme has developed, and it is repeatedly indicated that in order to an understanding of the play of forces in the more advanced stages of economic development and complication, it is necessary to apprehend these forces in their unsophisticated form as they work out in the simple scheme prevalent on the plane of primitive life. Indeed, to a reader not well acquainted with Mr. Clark's scope and method of economic theorizing, these early pages would suggest that he is preparing for something in the way of a genetic study,—a study of economic institutions approached from the side of their origins. It looks as if the intended line of approach to the modern situation might be such as an evolutionist would choose, who would set out with showing what forces are at work in the primitive economic community, and then trace the cumulative growth and complication of these factors as they presently take form in the institutions of a later phase of the development. Such, however, is not Mr. Clark's intention. The effect of his recourse to "primitive life" is simply to throw into the foreground, in a highly unreal perspective, those features which lend themselves to interpretation in terms of the normalized competitive system. The best excuse that can be offered for these excursions into "primitive life" is that they have substantially nothing to do with the main argument

of the book, being of the nature of harmless and graceful misinformation.

In the primitive economic situation—that is to say, in savagery and the lower barbarism—there is, of course, no "solitary hunter," living either in a cave or otherwise, and there is no man who "makes by his own labor all the goods that he uses," etc. It is, in effect, a highly meretricious misrepresentation to speak in this connection of "the economy of a man who works only for himself," and say that "the inherent productive power of labor and capital is of vital concern to him," because such a presentation of the matter overlooks the main facts in the case in order to put the emphasis on a feature which is of negligible consequence. There is no reasonable doubt but that, at least since mankind reached the human plane, the economic unit has been not a "solitary hunter," but a community of some kind; in which, by the way, women seem in the early stages to have been the most consequential factor in stead of the man who works for himself. The "capital" possessed by such a community—as, *e.g.*, a band of California "Digger" Indians—was a negligible quantity, more valuable to a collector of curios than to any one else, and the loss of which to the "Digger" squaws would mean very little. What was of "vital concern" to them, indeed, what the life of the group depended on absolutely, was the accumulated wisdom of the squaws, the technology of their economic situation.[1] The loss of the basket, digging-stick, and mortar, simply as physical objects, would have signified little, but the conceivable loss of the squaw's knowledge of the soil and seasons, of food and fibre plants, and of mechanical expedients, would have meant the present dispersal and starvation of the community.

This may seem like taking Mr. Clark to task for an

[1] *Cf.*, *e.g.*, such an account as Barrows, Ethno-botany of the Coahuila Indians.

inconsequential gap in his general information on Digger Indians, Eskimos, and paleolithic society at large. But the point raised is not of negligible consequence for economic theory, particularly not for any theory of "economic dynamics" that turns in great part about questions of capital and its uses at different stages of economic development. In the primitive culture the quantity and the value of mechanical appliances is relatively slight; and whether the group is actually possessed of more or less of such appliances at a given time is not a question of first-rate importance. The loss of these objects—tangible assets—would entail a transient inconvenience. But the accumulated, habitual knowledge of the ways and means involved in the production and use of these appliances is the outcome of long experience and experimentation; and, given this body of commonplace technological information, the acquisition and employment of the suitable apparatus is easily arranged. The great body of commonplace knowledge made use of in industry is the product and heritage of the group. In its essentials it is known by common notoriety, and the "capital goods" needed for putting this commonplace technological knowledge to use are a slight matter,—practically within the reach of every one. Under these circumstances the ownership of "capital-goods" has no great significance, and, as a practical fact, interest and wages are unknown, and the "earning power of capital" is not seen to be "governed by a specific power of productivity which resides in capital-goods." But the situation changes, presently, by what is called an advance "in the industrial arts." The "capital" required to put the commonplace knowledge to effect grows larger, and so its acquisition becomes an increasingly difficult matter. Through "difficulty of attainment" in adequate quantities the apparatus and its ownership become a matter of consequence; increasingly so, until

presently the equipment required for an effective pursuit of industry comes to be greater than the common man can hope to acquire in a lifetime. The commonplace knowledge of ways and means, the accumulated experience of mankind, is still transmitted in and by the body of the community at large; but, for practical purposes, the advanced "state of the industrial arts" has enabled the owners of goods to corner the wisdom of the ancients and the accumulated experience of the race. Hence "capital," as it stands at that phase of the institution's growth contemplated by Mr. Clark.

The "natural" system of free competition, or, as it was once called, "the simple and obvious system of natural liberty," is accordingly a phase of the development of the institution of capital; and its claim to immutable dominion is evidently as good as the like claim of any other phase of cultural growth. The equity, or "natural justice," claimed for it is evidently just and equitable only in so far as the conventions of ownership on which it rests continue to be a secure integral part of the institutional furniture of the community; that is to say, so long as these conventions are part and parcel of the habits of thought of the community; that is to say, so long as these things are currently held to be just and equitable. This normalized present, or "natural," state of Mr. Clark, is, as near as may be, Senior's "Natural State of Man,"—the hypothetically perfect competitive system; and economic theory consists in the definition and classification of the phenomena of economic life in terms of this hypothetical competitive system.

Taken by itself, Mr. Clark's dealing with the past development might be passed over with slight comment, except for its negative significance, since it has no theoretical connection with the present, or even with the "natural" state in which the phenomena of economic life

are assumed to arrange themselves in a stable, normal scheme. But his dealings with the future, and with the present in so far as the present situation is conceived to comprise "dynamic" factors, is of substantially the same kind. With Senior's "natural state of man" as the base-line of normality in things economic, questions of present and future development are treated as questions of departure from the normal, aberrations and excesses which the theory does not aim even to account for. What is offered in place of theoretical inquiry when these "positive perversions of the natural forces themselves" are taken up (*e.g.*, in chapters xxii.–xxix.) is an exposition of the corrections that must be made to bring the situation back to the normal static state, and solicitous advice as to what measures are to be taken with a view to this beneficent end. The problem presented to Mr. Clark by the current phenomena of economic development is: how can it be stopped? or, failing that, how can it be guided and minimized? Nowhere is there a sustained inquiry into the dynamic character of the changes that have brought the present (deplorable) situation to pass, nor into the nature and trend of the forces at work in the development that is going forward in this situation. None of this is covered by Mr. Clark's use of the word "dynamic." All that it covers in the way of theory (chapters xii.–xxi.) is a speculative inquiry as to how the equilibrium re-established itself when one or more of the quantities involved increases or decreases. Other than quantitive changes are not noticed, except as provocations to homiletic discourse. Not even the causes and the scope of the quantitive changes that may take place in the variables are allowed to fall within the scope of the theory of economic dynamics.

So much of the volume, then, and of the system of doctrines of which the volume is an exposition, as is

comprised in the later eight chapters (pp. 372–554), is an exposition of grievances and remedies, with only sporadic intrusions of theoretical matter, and does not properly constitute a part of the theory, whether static or dynamic. There is no intention here to take exception to Mr. Clark's outspoken attitude of disapproval toward certain features of the current business situation or to quarrel with the remedial measures which he thinks proper and necessary. This phase of his work is spoken of here rather to call attention to the temperate but uncompromising tone of Mr. Clark's writings as a spokesman for the competitive system, considered as an element in the Order of Nature, and to note the fact that this is not economic theory.[1]

The theoretical section specifically scheduled as Economic Dynamics (chapters xii.–xxi.), on the other hand, is properly to be included under the caption of Statics. As already remarked above, it presents a theory of equilibrium between variables. Mr. Clark is, indeed, barred out by his premises from any but a statical development of theory. To realize the substantially statical character of his Dynamics, it is only necessary to turn to his chapter xii. (Economic Dynamics). "A highly dynamic condition, then, is one in which the economic organism changes rapidly and yet, at any time in the course of its changes, is relatively near to a certain static model" (p. 196). "The actual shape of society at any one time is not the static model of that time; but it tends to conform to it; and in a very dynamic society is more nearly like it

[1] What would be the scientific rating of the work of a botanist who should spend his energy in devising ways and means to neutralise the ecological variability of plants, or of a physiologist who conceived it the end of his scientific endeavors to rehabilitate the vermiform appendix or the pineal eye, or to denounce and penalise the imitative coloring of the Viceroy butterfly? What scientific interest would attach to the matter if Mr. Loeb, *e.g.*, should devote a few score pages to canvassing the moral responsibilities incurred by him in his parental relation to his parthenogenetically developed sea-urchin eggs?

Those phenomena which Mr. Clark characterizes as "positive perversions" may be distasteful and troublesome, perhaps, but "the economic necessity of doing what is legally difficult" is not of the "essentials of theory."

than it would be in one in which the forces of change are less active" (p. 197). The more "dynamic" the society, the nearer it is to the static model; until in an ideally dynamic society, with a frictionless competitive system, to use Mr. Clark's figure, the static state would be attained, except for an increase in size,—that is to say, the ideally perfect "dynamic" state would coincide with the "static" state. Mr. Clark's conception of a dynamic state reduces itself to a conception of an imperfectly static state, but in such a sense that the more highly and truly "dynamic" condition is thereby the nearer to a static condition. Neither the static nor the dynamic state, in Mr. Clark's view, it should be remarked, is a state of quiescence. Both are states of more or less intense activity, the essential difference being that in the static state the activity goes on in perfection, without lag, leak, or friction; the movement of parts being so perfect as not to disturb the equilibrium. The static state is the more "dynamic" of the two. The "dynamic" condition is essentially a deranged static condition: whereas the static state is the absolute perfect, "natural" taxonomic norm of competitive life. This dynamic-static state may vary in respect of the magnitude of the several factors which hold one another in equilibrium, but these are none other than quantitive variations. The changes which Mr. Clark discusses under the head of dynamics are all of this character,—changes in absolute or relative magnitude of the several factors comprised in the equation.

But, not to quarrel with Mr. Clark's use of the terms "static" and "dynamic," it is in place to inquire into the merits of this class of economic science apart from any adventitious shortcomings. For such an inquiry Mr. Clark's work offers peculiar advantages. It is lucid, concise, and unequivocal, with no temporizing euphemisms

and no politic affectations of sentiment. Mr. Clark's premises, and therewith the aim of his inquiry, are the standard ones of the classical English school (including the Jevons-Austrian wing). This school of economics stands on the pre-evolutionary ground of normality and "natural law," which the great body of theoretical science occupied in the early nineteenth century. It is like the other theoretical sciences that grew out of the rationalistic and humanitarian conceptions of the eighteenth century in that its theoretical aim is taxonomy—definition and classification—with the purpose of subsuming its data under a rational scheme of categories which are presumed to make up the Order of Nature. This Order of Nature, or realm of Natural Law, is not the actual run of material facts, but the facts so interpreted as to meet the needs of the taxonomist in point of taste, logical consistency, and sense of justice. The question of the truth and adequacy of the categories is a question as to the consensus of taste and predilection among the taxonomists; *i.e.*, they are an expression of trained human nature touching the matter of what ought to be. The facts so interpreted make up the "normal," or "natural," scheme of things, with which the theorist has to do. His task is to bring facts within the framework of this scheme of "natural" categories. Coupled with this scientific purpose of the taxonomic economist is the pragmatic purpose of finding and advocating the expedient course of policy. On this latter head, again, Mr. Clark is true to the animus of the school.

The classical school, including Mr. Clark and his contemporary associates in the science, is hedonistic and utilitarian,—hedonistic in its theory and utilitarian in its pragmatic ideals and endeavors. The hedonistic postulates on which this line of economic theory is built up are of a statical scope and character, and nothing but

statical theory (taxonomy) comes out of their development.[1] These postulates, and the theorems drawn from them, take account of none but quantitive variations, and quantitive variation alone does not give rise to cumulative change, which proceeds on changes in kind.

Economics of the line represented at its best by Mr. Clark has never entered this field of cumulative change. It does not approach questions of the class which occupy the modern sciences,—that is to say, questions of genesis, growth, variation, process (in short, questions of a dynamic import),—but confines its interest to the definition and classification of a mechanically limited range of phenomena. Like other taxonomic sciences, hedonistic economics does not, and cannot, deal with phenomena of growth except so far as growth is taken in the quantitative sense of a variation in magnitude, bulk, mass, number, frequency. In its work of taxonomy this economics has consistently bound itself, as Mr. Clark does, by distinctions of a mechanical, statistical nature, and has drawn its categories of classification on those grounds. Concretely, it is confined, in substance, to the determination of and refinements upon the concepts of land, labor, and capital, as handed down by the great economists of the classical era, and the correlate concepts of rent, wages, interest and profits. Solicitously, with a painfully meticulous circumspection, the normal, mechanical metes and bounds of these several concepts are worked out, the touchstone of the absolute truth aimed at being the hedonistic calculus. The facts of use and wont are not of the essence of this mechanical refinement. These several categories

[1] It is a notable fact that even the genius of Herbert Spencer could extract nothing but taxonomy from his hedonistic postulates; *e.g.*, his Social Statics. Spencer is both evolutionist and hedonist, but it is only by recourse to other factors, alien to the rational hedonistic scheme, such as habit, delusions, use and disuse, sporadic variation, environmental forces, that he is able to achieve anything in the way of genetic science, since it is only by this recourse that he is enabled to enter the field of cumulative change within which the modern post-Darwinian sciences live and move and have their being.

are mutually exclusive categories, mechanically speaking. The circumstance that the phenomena covered by them are not mechanical facts is not allowed to disturb the pursuit of mechanical distinctions among them. They nowhere overlap, and at the same time between them they cover all the facts with which this economic taxonomy is concerned. Indeed, they are in logical consistency, required to cover them. They are hedonistically "natural" categories of such taxonomic force that their elemental lines of cleavage run through the facts of any given economic situation, regardless of use and wont, even where the situation does not permit these lines of cleavage to be seen by men and recognized by use and wont; so that, *e.g.*, a gang of Aleutian Islanders slushing about in the wrack and surf with rakes and magical incantations for the capture of shell-fish are held, in point of taxonomic reality, to be engaged on a feat of hedonistic equilibration in rent, wages, and interest. And that is all there is to it. Indeed, for economic theory of this kind, that is all there is to any economic situation. The hedonistic magnitudes vary from one situation to another, but, except for variations in the arithmetical details of the hedonistic balance, all situations are, in point of economic theory, substantially alike.[1]

Taking this unfaltering taxonomy on its own recognizances, let us follow the trail somewhat more into the arithmetical details, as it leads along the narrow ridge of rational calculation, above the tree-tops, on the levels of clear sunlight and moonshine. For the purpose in

[1] "The capital-goods have to be taken unit by unit if their value for productive purposes is to be rightly gauged. A part of a supply of potatoes is traceable to the hoes that dig them. . . . We endeavor simply to ascertain how badly the loss of one hoe would affect us or how much good the restoration of it would do us. This truth, like the foregoing ones, has a universal application in economics; for primitive men as well as civilized ones must estimate the specific productivity of the tools that they use," etc. Page 43.

hand—to bring out the character of this current economic science as a working theory of current facts, and more particularly "as applied to modern problems of industry and public policy" (title-page)—the sequence to be observed in questioning the several sections into which the theoretical structure falls is not essential. The structure of classical theory is familiar to all students, and Mr. Clark's redaction offers no serious departure from the conventional lines. Such divergence from conventional lines as may occur is a matter of details, commonly of improvements in detail; and the revisions of detail do not stand in such an organic relation to one another, nor do they support and strengthen one another in such a manner, as to suggest anything like a revolutionary trend or a breaking away from the conventional lines.

So as regards Mr. Clark's doctrine of Capital. It does not differ substantially from the doctrines which are gaining currency at the hands of such writers as Mr. Fisher or Mr. Fetter; altho there are certain formal distinctions peculiar to Mr. Clark's exposition of the "Capital Concept." But these peculiarities are peculiarities of the method of arriving at the concept rather than peculiarities substantial to the concept itself. The main discussion of the nature of capital is contained in chapter ii. (Varieties of Economic Goods). The conception of capital here set forth is of fundamental consequence to the system, partly because of the important place assigned capital in this system of theory, partly because of the importance which the conception of capital must have in any theory that is to deal with problems of the current (capitalistic) situation. Several classes of capital-goods are enumerated, but it appears that in Mr. Clark's apprehension—at variance with Mr. Fisher's view—persons are not to be included among the items of capital. It is also clear from the run of the argument,

tho not explicitly stated, that only material, tangible, mechanically definable articles of wealth go to make up capital. In current usage, in the business community, "capital" is a pecuniary concept, of course, and is not definable in mechanical terms; but Mr. Clark, true to the hedonistic taxonomy, sticks by the test of mechanical demarcation and draws the lines of his category on physical grounds; whereby it happens that any pecuniary conception of capital is out of the question. Intangible assets, or immaterial wealth, have no place in the theory; and Mr. Clark is exceptionally subtle and consistent in avoiding such modern notions. One gets the impression that such a notion as intangible assets is conceived to be too chimerical to merit attention, even by way of protest or refutation.

Here, as elsewhere in Mr. Clark's writings, much is made of the doctrine that the two facts of "capital" and "capital-goods" are conceptually distinct, tho substantially identical. The two terms cover virtually the same facts as would be covered by the terms "pecuniary capital" and "industrial equipment." They are for all ordinary purposes coincident with Mr. Fisher's terms, "capital value" and "capital," altho Mr. Clark might enter a technical protest against identifying his categories with those employed by Mr. Fisher.[1] "Capital is this permanent fund of productive goods, the identity of whose component elements is forever changing. Capital-goods are the shifting component parts of this permanent aggregate" (p. 29). Mr. Clark admits (pp. 29–33) that capital is colloquially spoken and thought of in terms of value, but he insists that in point of substantial fact the working concept of capital is (should be) that of "a fund of productive goods," considered as an "abiding entity." The phrase itself, "a fund of productive goods," is a

[1] *Cf.* a criticism of Mr. Fisher's conception in the Political Science Quarterly for February, 1908.

curiousiy confusing mixture of pecuniary and mechanical terms, tho the pecuniary expression, "a fund," is probably to be taken in this connection as a permissible metaphor.

This conception of capital, as a physically "abiding entity" constituted by the succession of productive goods that make up the industrial equipment, breaks down in Mr. Clark's own use of it when he comes (pp. 37–38) to speak of the mobility of capital; that is to say, so soon as he makes use of it. A single illustration of this will have to suffice, tho there are several points in his argument where the frailty of the conception is patent enough. "The transfer of capital from one industry to another is a dynamic phenomena which is later to be considered. What is here important is the fact that it is in the main accomplished without entailing transfers of capital-goods. An instrument wears itself out in one industry, and instead of being succeeded by a like instrument in the same industry, it is succeeded by one of a different kind which is used in a different branch of production" (p. 38),—illustrated on the preceding page by a shifting of investment from a whaling-ship to a cotton-mill. In all this it is plain that the "transfer of capital" contemplated is a shifting of investment, and that it is, as indeed Mr. Clark indicates, not a matter of the mechanical shifting of physical bodies from one industry to the other. To speak of a transfer of "capital" which does not involve a transfer of "capital-goods" is a contradiction of the main position, that "capital" is made up of "capital-goods." The continuum in which the "abiding entity" of capital resides is a continuity of ownership, not of physical fact. The continuity, in fact, is of an immaterial nature, a matter of legal rights, of contract, of purchase and sale. Just why this patent state of the case is overlooked, as it somewhat elaborately is, is not easily seen. But it is plain that, if the concept

of capital were elaborated from observation of current business practice, it would be found that "capital" is a pecuniary fact, not a mechanical one; that it is an outcome of a valuation, depending immediately on the state of mind of the valuers; and that the specific marks of capital, by which it is distinguishable from other facts, are of an immaterial character. This would, of course, lead, directly, to the admission of intangible assets; and this, in turn, would upset the law of the "natural" remuneration of labor and capital to which Mr. Clark's argument looks forward from the start. It would also bring in the "unnatural" phenomena of monopoly as a normal outgrowth of business enterprise.

There is a further logical discrepancy avoided by resorting to the alleged facts of primitive industry, when there was no capital, for the elements out of which to construct a capital concept, instead of going to the current business situation. In a hedonistic-utilitarian scheme of economic doctrine, such as Mr. Clark's, only physically productive agencies can be admitted as efficient factors in production or as legitimate claimants to a share in distribution. Hence capital, one of the prime factors in production and the central claimant in the current scheme of distribution, must be defined in physical terms and delimited by mechanical distinctions. This is necessary for reasons which appear in the succeeding chapter, on The Measure of Consumers' Wealth.

On the same page (38), and elsewhere, it is remarked that "business disasters" destroy capital in part. The destruction in question is a question of value; that is to say, a lowering of valuation, not in any appreciable degree a destruction of material goods. Taken as a physical aggregate, capital does not appreciably decrease through business disasters, but, taken as a fact of ownership and counted in standard units of value, it decreases; there is

a destruction of values and a shifting of ownership, a loss of ownership perhaps; but these are pecuniary phenomena, of an immaterial character, and so do not directly affect the material aggregate of the industrial equipment. Similarly, the discussion (pp. 301–314) of how changes of method, as, *e.g.*, labor-saving devices, "liberate capital," and at times "destroy" capital, is intelligible only on the admission that "capital" here is a matter of values owned by investors and is not employed as a synonym for industrial appliances. The appliances in question are neither liberated nor destroyed in the changes contemplated. And it will not do to say that the aggregate of "productive goods" suffers a diminution by a substitution of devices which increases its aggregate productiveness, as is implied, *e.g.*, by the passage on page 307,[1] if Mr. Clark's definition of capital is strictly adhered to. This very singular passage (pp. 306–311, under the captions Hardships entailed on Capitalists by Progress and the Offset for Capital destroyed by Changes of Method) implies that the aggregate of appliances of production is decreased by a change which increases the aggregate of these articles in that respect (productivity) by virtue of which they are counted in the aggregate. The argument will hold good if "productive goods" are rated by bulk, weight, number, or some such irrelevant test, instead of by their productivity or by their consequent capitalized value. On such a showing it should be proper to say that the polishing of plowshares before they are sent out from the factory diminishes the amount of capital embodied in plowshares by as much as the weight of bulk

[1] "The machine itself is often a hopeless specialist. It can do one minute thing and that only, and when a new and better device appears for doing that one thing, the machine has to go, and not to some new employment, but to the junk heap. There is thus taking place a considerable waste of capital in consequence of mechanical and other progress." "Indeed, a quick throwing away of instruments which have barely begun to do their work is often the secret of the success of an enterprising manager, but it entails a destruction of capital."

of the waste material removed from the shares in polishing them.

Several things may be said of the facts discussed in this passage. There is, presumably, a decrease, in bulk, weight, or number, of the appliances that make up the industrial equipment at the time when such a technological change as is contemplated takes place. This change, presumably, increases the productive efficiency of the equipment as a whole, and so may be said without hesitation to increase the equipment as a factor of production, while it may decrease it, considered as a mechanical magnitude. The owners of the obsolete or obsolescent appliances presumably suffer a diminution of their capital, whether they discard the obsolete appliances or not. The owners of the new appliances, or rather those who own and are able to capitalize the new technological expedients, presumably gain a corresponding advantage, which may take the form of an increase of the effective capitalization of their outfit, as would then be shown by an increased market value of their plant. The largest theoretical outcome of the supposed changes, for an economist not bound by Mr. Clark's conception of capital, should be the generalization that industrial capital—capital considered as a productive agent—is substantially a capitalization of technological expedients, and that a given capital invested in industrial equipment is measured by the portion of technological expedients whose usufruct the investment appropriates. It would accordingly appear that the substantial core of all capital is immaterial wealth, and that the material objects which are formally the subject of the capitalist's ownership are, by comparison, a transient and adventitious matter. But if such a view were accepted, even with extreme reservations, Mr. Clark's scheme of the "natural" distribution of incomes between capital and labor would "go up in the air," as the collo-

quial phrase has it. It would be extremely difficult to determine what share of the value of the joint product of capital and labor should, under a rule of "natural" equity, go to the capitalist as an equitable return for his monopolization of a given portion of the intangible assets of the community at large.[1] The returns actually accruing to him under competitive conditions would be a measure of the differential advantage held by him by virtue of his having become legally seized of the material contrivances by which the technological achievements of the community are put into effect.

Yet, if in this way capital were apprehended as "an historical category," as Rodbertus would say, there is at least the comfort in it all that it should leave a free field for Mr. Clark's measures of repression as applied to the discretionary management of capital by the makers of trusts. And yet, again, this comforting reflection is coupled with the ugly accompaniment that by the same move the field would be left equally free of moral obstructions to the extreme proposals of the socialists. A safe and sane course for the quietist in these premises should apparently be to discard the equivocal doctrines of the passage (pp. 306–311) from which this train of questions arises, and hold fast to the received dogma, however unworkable, that "capital" is a congeries of physical objects with no ramifications or complications of an immaterial kind, and to avoid all recourse to the concept of value, or price, in discussing matters of modern business.

The center of interest and of theoretical force and validity in Mr. Clark's work is his law of "natural" distribution. Upon this law hangs very much of the rest, if not substan-

[1] The position of the laborer and his wages, in this light, would not be substantially different from that of the capitalist and his interest. Labor is no more possible, as a fact of industry, without the community's accumulated technological knowledge than is the use of "productive goods."

tially the whole structure of theory. To this law of distribution the earlier portions of the theoretical development look forward, and this the succeeding portions of the treatise take as their point of departure. The law of "natural" distribution says that any productive agent "naturally" gets what it produces. Under ideally free competitive conditions—such as prevail in the "static" state, and to which the current situation approximates—each unit of each productive factor unavoidably gets the amount of wealth which it creates,—its "virtual product," as it is sometimes expressed. This law rests, for its theoretical validity, on the doctrine of "final productivity," set forth in full in the Distribution of Wealth, and more concisely in the Essentials,[1]—"one of those universal principles which govern economic life in all its stages of evolution." [2]

In combination with a given amount of capital, it is held, each succeeding unit of added labor adds a less than proportionate increment to the product. The total product created by the labor so engaged is at the same time the distributive share received by such labor as wages; and it equals the increment of product added by the "final" unit of labor, multiplied by the number of such units engaged. The law of "natural" interest is the same as this law of wages, with a change of terms. The product of each unit of labor or capital being measured by the product of the "final" unit, each gets the amount of its own product.

In all of this the argument runs in terms of value; but it is Mr. Clark's view, backed by an elaborate exposition of the grounds of his contention,[3] that the use of these terms of value is merely a matter of convenience for the argument, and that the conclusions so reached—the equality so established between productivity and remun-

[1] *Cf.* Distribution of Wealth, chaps. xii., xiii., vii., viii.; Essentials, chaps. v.–x.

[2] Essentials, p. 148.

[3] Distribution, chap. xxiv.

eration—may be converted to terms of goods, or "effective utility," without abating their validity.

Without recourse to some such common denominator as value the outcome of the argument would, as Mr. Clark indicates, be something resembling the Ricardian law of differential rent instead of a law drawn in homogeneous terms of "final productivity"; and the law of "natural" distribution would then, at the best, fall short of a general formula. But the recourse to terms of value does not, as Mr. Clark recognizes, dispose of the question without more ado. It smooths the way for the argument, but, unaided, it leaves it nugatory. According to Hudibras, "The value of a thing Is just as much as it will bring," and the later refinements on the theory of value have not set aside this dictum of the ancient authority. It answers no pertinent question of equity to say that the wages paid for labor are as much as it will bring. And Mr. Clark's chapter (xxiv.) on "The Unit for Measuring Industrial Agents and their Products" is designed to show how this tautological statement in terms of market value converts itself, under competitive conditions, into a competent formula of distributive justice. It does not conduce to intelligibility to say that the wages of labor are just and fair because they are all that is paid to labor as wages. What further value Mr. Clark's extended discussion of this matter may have will lie in his exposition of how competition converts the proposition that "the value of a thing is just as much as it will bring" into the proposition that "the market rate of wages (or interest) gives to labor (or capital) the full product of labor (or capital)."

In following up the theory at this critical point, it is necessary to resort to the fuller statement of the Distribution of Wealth,[1] the point being not so adequately covered in the Essentials. Consistently hedonistic, Mr. Clark recognizes that his law of natural justice must be reduced

[1] Chap. xxiv.

to elementary hedonistic terms, if it is to make good its claim to stand as a fundamental principle of theory. In hedonistic theory, production of course means the production of utilities, and utility is of course utility to the consumer.[1] A product is such by virtue of and to the amount of the utility which it has for a consumer. This utility of the goods is measured, as value, by the sacrifice (disutility) which the consumer is willing to undergo in order to get the utility which the consumption of the goods yields him. The unit and measure of productive labor is in the last analysis also a unit of disutility; but it is disutility to the productive laborer, not to the consumer. The balance which establishes itself under competitive conditions is a compound balance, being a balance between the utility of the goods to the consumer and the disutility (cost) which he is willing to undergo for it, on the one hand, and, on the other hand, a balance between the disutility of the unit of labor and the utility for which the laborer is willing to undergo this disutility. It is evident, and admitted, that there can be no balance, and no commensurability, between the laborer's disutility (pain) in producing the goods and the consumer's utility (pleasure) in consuming them, inasmuch as these two hedonistic phenomena lie each within the consciousness of a distinct person. There is, in fact, no continuity of nervous tissue over the interval between consumer and producer, and a direct comparison, equilibrium, equality, or discrepancy in respect of pleasure and pain can, of course, not be sought except within each self-balanced individual complex of nervous tissue.[2] The wages of

[1] Essentials, p. 40.

[2] Among modern economic hedonists, including Mr. Clark, there stands over from the better days of the order of nature a presumption, disavowed, but often decisive, that the sensational response to the like mechanical impact of the stimulating body is the same in different individuals. But, while this presumption stands ever in the background, and helps to many important conclusions, as in the case under discussion, few modern hedonists would question the statement in the text.

labor (*i.e.*, the utility of the goods received by the laborer) is not equal to the disutility undergone by him, except in the sense that he is competitively willing to accept it; nor are these wages equal to the utility got by the consumer of the goods, except in the sense that he is competitively willing to pay them. This point is covered by the current diagrammatic arguments of marginal-utility theory as to the determination of competitive prices.

But, while the wages are not equal to or directly comparable with the disutility of the productive labor engaged, they are, in Mr. Clark's view, equal to the "productive efficiency" of that labor.[1] "Efficiency in a worker is, in reality, power to draw out labor on the part of society. It is capacity to offer that for which society will work in return." By the mediation of market price, under competitive conditions, it is held, the laborer gets, in his wages, a valid claim on the labor of other men (society) as large as they are competitively willing to allow him for the services for which he is paid his wages. The equitable balance between work and pay contemplated by the "natural" law is a balance between wages and "efficiency," as above defined; that is to say, between the wages of labor and the capacity of labor to get wages. So far, the whole matter might evidently have been left as Bastiat left it. It amounts to saying that the laborer gets what he is willing to accept and the consumers give what they are willing to pay. And this is true, of course, whether competition prevails or not.

What makes this arrangement just and right under competitive conditions, in Mr. Clark's view, lies in his further doctrine that under such conditions of unobstructed competition the prices of goods, and therefore the wages of labor, are determined, within the scope of the given market, by a quasi-consensus of all the parties in interest.

[1] Distribution, p. 394

There is of course no formal consensus, but what there is of the kind is implied in the fact that bargains are made, and this is taken as an appraisement by "society" at large. The (quasi-) consensus of buyers is held to embody the righteous (quasi-) appraisement of society in the premises, and the resulting rate of wages is therefore a (quasi-) just return to the laborer.[1] "Each man accordingly is paid an amount that equals the total product that he personally creates."[2] If competitive conditions are in any degree disturbed, the equitable balance of prices and wages is disturbed by that much. All this holds true for the interest of capital, with a change of terms.

The equity and binding force of this finding is evidently bound up with that common-sense presumption on which it rests; namely, that it is right and good that all men should get what they can without force or fraud and without disturbing existing property relations. It springs from this presumption, and, whether in point of equity or of expediency, it rises no higher than its source. It does not touch questions of equity beyond this, nor does it touch questions of the expediency or probable advent of any contemplated change in the existing conventions as to rights of ownership and initiative. It affords a basis for those who believe in the old order—without which belief this whole structure of opinions collapses—to argue questions of wages and profits in a manner convincing to themselves, and to confirm in the faith those who already believe in the old order. But it is not easy to see that some hundreds of pages of apparatus should be required to find one's way back to these time-worn commonplaces of Manchester.

[1] In Mr. Clark's discussion, elsewhere, the "quasi"-character of the productive share of the laborer is indicated by saying that it is the product "imputed" or "imputable" to him.

[2] Essentials, p. 92. "Et si sensus deficit, ad firmandum eor sincerum sola fides sufficit."

In effect, this law of "natural" distribution says that whatever men acquire without force or fraud under competitive conditions is their equitable due, no more and no less, assuming that the competitive system, with its underlying institution of ownership, is equitable and "natural." In point of economic theory the law appears on examination to be of slight consequence, but it merits further attention for the gravity of its purport. It is offered as a definitive law of equitable distribution comprised in a system of hedonistic economics which is in the main a theory of distributive acquisition only. It is worth while to compare the law with its setting, with a view to seeing how its broad declaration of economic justice shows up in contrast with the elements out of which it is constructed and among which it lies.

Among the notable chapters of the Essentials is one (vi.) on Value and its Relation to Different Incomes, which is not only a very substantial section of Mr. Clark's economic theory, but at the same time a type of the achievements of the latter-day hedonistic school. Certain features of this chapter alone can be taken up here. The rest may be equally worthy the student's attention, but it is the intention here not to go into the general substance of the theory of marginal utility and value, to which the chapter is devoted, but to confine attention to such elements of it as bear somewhat directly on the question of equitable distribution already spoken of. Among these latter is the doctrine of the "consumer's surplus,"—virtually the same as what is spoken of by other writers as "consumer's rent."[1] "Consumer's surplus" is the surplus of utility (pleasure) derived by the consumer of goods above the (pain) cost of the goods to him. This is held to be a very generally prevalent phenomenon. Indeed, it is held to be all but universally present in the

[1] See pp. 102–113; also p. 172, note.

field of consumption. It might, in fact, be effectively argued that even Mr. Clark's admitted exception[1] is very doubtfully to be allowed, on his own showing. Correlated with this element of utility on the consumer's side is a similar volume of disutility on the producer's side, which may be called "producer's abatement," or "producer's rent": it is the amount of disutility by which the disutility-cost of a given article to any given producer (laborer) falls short of (or conceivably exceeds) the disutility incurred by the marginal producer. Marginal buyers or consumers and marginal sellers or producers are relatively few: the great body on both sides come in for something in the way of a "surplus" of utility or disutility.

All this bears on the law of "natural" wages and interest as follows, taking that law of just remuneration at Mr. Clark's rating of it. The law works out through the mediation of price. Price is determined, competitively, by marginal producers or sellers and marginal consumers or purchasers: the latter alone on the one side get the precise price-equivalent of the disutility incurred by them, and the latter alone on the other side pay the full price-equivalent of the utilities derived by them from the goods purchased.[2] Hence the competitive price—covering competitive wages and interest—does not reflect the consensus of all parties concerned as to the "effective utility" of the goods, on the one hand, or as to their effective (disutility) cost, on the other hand. It reflects instead, if anything of this kind, the valuations which the marginal unfortunates on each side concede under stress of competition; and it leaves on each side of the bargain relation an uncovered "surplus," which marks the (variable) interval by which price fails to cover "ef-

[1] "The cheapest and poorest grades of articles." Page 113.

[2] See p. 113.

fective utility." The excess utility—and the conceivable excess cost—does not appear in the market transactions that mediate between consumer and producer.[1] In the balance, therefore, which establishes itself in terms of value between the social utility of the product and the remuneration of the producer's "efficiency," the margin of utility represented by the aggregate "consumer's surplus" and like elements is not accounted for. It follows, when the argument is in this way reduced to its hedonistic elements, that no man "is paid an amount that equals the amount of the total product that he personally creates."

Supposing the marginal-utility (final-utility) theories of objective value to be true, there is no consensus, actual or constructive, as to the "effective utility" of the goods produced: there is no "social" decision in the case beyond what may be implied in the readiness of buyers to profit as much as may be by the necessities of the marginal buyer and seller. It appears that there is warrant, within these premises, for the formula: Remuneration $\gtrless$ than Product. Only by an infinitesimal chance would it hold true in any given case that, hedonistically, Remuneration = Product; and, if it should ever happen to be true, there would be no finding it out.

The (hedonistic) discrepancy which so appears between remuneration and product affects both wages and interest in the same manner, but there is some (hedonistic) ground in Mr. Clark's doctrines for holding that the discrepancy does not strike both in the same degree. There is indeed no warrant for holding that there is anything like an equable distribution of this discrepancy among the several industries or the several industrial

[1] The disappearance, and the method of disappearance, of such elements of differential utility and disutility occupies a very important place in all marginal-utility ("final-utility") theories of market value, or "objective value."

concerns; but there appears to be some warrant, on Mr. Clark's argument, for thinking that the discrepancy is perhaps slighter in those branches of industry which produce the prime necessaries of life.[1] This point of doctrine throws also a faint (metaphysical) light on a, possibly generic, discrepancy between the remuneration of capitalists and that of laborers: the latter are, relatively, more addicted to consuming the necessaries of life, and it may be that they thereby gain less in the way of a consumer's surplus.

All the analysis and reasoning here set forth has an air of undue tenuity; but in extenuation of this fault it should be noted that this reasoning is made up of such matter as goes to make up the theory under review, and the fault, therefore, is not to be charged to the critic. The manner of argument required to meet this theory of the "natural law of final productivity" on its own ground is itself a sufficiently tedious proof of the futility of the whole matter in dispute. Yet it seems necessary to beg further indulgence for more of the same kind. As a needed excuse, it may be added that what immediately follows bears on Mr. Clark's application of the law of "natural distribution" to modern problems of industry and public policy, in the matter of curbing monopolies.

Accepting, again, Mr. Clark's general postulates—the postulates of current hedonistic economics—and applying the fundamental concepts, instead of their corollaries, to his scheme of final productivity, it can be shown to fail on grounds even more tenuous and hedonistically more fundamental than those already passed in review. In all final-utility (marginal-utility) theory it is of the essence of the scheme of things that successive increments

[1] "Only the simplest and cheapest things that are sold in the market at all bring just what they are worth to the buyers." Page 113.

of a "good" have progressively less than proportionate utility. In fact, the coefficient of decrease of utility is greater than the coefficient of increase of the stock of goods. The solitary "first loaf" is exorbitantly useful. As more loaves are successively added to the stock, the utility of each grows small by degrees and incontinently less, until, in the end, the state of the "marginal" or "final" loaf is, in respect of utility, shameful to relate. So, with a change of phrase, it fares with successive increments of a given productive factor—labor or capital—in Mr. Clark's scheme of final productivity. And so, of course, it also fares with the utility of successive increments of product created by successively adding unit after unit to the complement of a given productive factor engaged in the case. If we attend to this matter of final productivity in consistently hedonistic terms, a curious result appears.

A larger complement of the productive agent, counted by weight and tale, will, it is commonly held, create a larger output of goods, counted by weight and tale;[1] but these are not hedonistic terms and should not be allowed to cloud the argument. In the hedonistic scheme the magnitude of goods, in all the dimensions to be taken account of, is measured in terms of utility, which is a different matter from weight and tale. It is by virtue of their utility that they are "goods," not by virtue of their physical dimensions, number and the like; and utility is a matter of the production of pleasure and the prevention of pain. Hedonistically speaking, the amount of the goods, the magnitude of the output, is the quantity

[1] It is, *e.g.*, open to serious question whether Mr. Clark's curves of final productivity (pp. 139, 148), showing a declining output per unit in response to an increase of one of the complementary agents of production, will fit the common run of industry in case the output be counted by weight and tale. In many cases they will, no doubt: in many other cases they will not. But this is no criticism of the curves in question, since they do not, or at least should not, purport to represent the product in such terms, but in terms of utility.

of utility derivable from their consumption; and the utility per unit decreases faster than the number of units increases.[1] It follows that in the typical or undifferentiated case an increase of the number of units beyond a certain critical point entails a decrease of the "total effective utility" of the supply.[2] This critical point seems ordinarily to be very near the point of departure of the curve of declining utility, perhaps it frequently coincides with the latter. On the curve of declining final utility, at any point whose tangent cuts the axis of ordinates at an angle of less than 45 degrees, an increase of the number of units entails a decrease of the "total effective utility of the supply,"[3] so that a gain in physical productivity is a loss as counted in "total effective utility." Hedonistically, therefore, the productivity in such a case diminishes, not only relatively to the (physical) magnitude of the productive agents, but absolutely. This critical point, of maximum "total effective utility," is, if the practice of shrewd business men is at all significant, commonly somewhat short of the point of maximum physical productivity, at least in modern industry and in a modern community.

The "total effective utility" may commonly be increased

[1] To resort to an approximation after the manner of Malthus, if the supply of goods be supposed to increase by arithmetical progression, their final utility may be said concomitantly to decrease by geometrical progression.

[2] *Cf.* Essentials, chap. iii., especially pp. 40–41.

[3] The current marginal-utility diagrams are not of much use in this connection, because the angle of the tangent with the axis of ordinates, at any point, is largely a matter of the draftsman's taste. The abscissa and the ordinate do not measure commensurable units. The units on the abscissa are units of frequency, while those on the ordinate are units of amplitude; and the greater or less segment of line allowed per unit on either axis is a matter of independently arbitrary choice. Yet the proposition in the text remains true,— as true as hedonistic propositions commonly are. The magnitude of the angle of the tangent with the axis of ordinates decides whether the total (hedonistic) productivity at a given point in the curve increases or decreases with a (mechanical) increase of the productive agent,— no student at all familiar with marginal-utility arguments will question that patent fact. But the angle of the tangent depends on the fancy of the draftsman,— no one possessed of the elementary mathematical notions will question that equally patent fact.

by decreasing the output of goods. The "total effective utility" of wages may often be increased by decreasing the amount (value) of the wages per man, particularly if such a decrease is accompanied by a rise in the price of articles to be bought with the wages. Hedonistically speaking, it is evident that the point of maximum net productivity is the point at which a perfectly shrewd business management of a perfect monopoly would limit the supply; and the point of maximum (hedonistic) remuneration (wages and interest) is the point which such a management would fix on in dealing with a wholly free, perfectly competitive supply of labor and capital.

Such a monopolistic state of things, it is true, would not answer to Mr. Clark's ideal. Each man would not be "paid an amount that equals the amount of the total product that he personally creates," but he would commonly be paid an amount that (hedonistically, in point of "effective utility") exceeds what he personally creates, because of the high final utility of what he receives. This is easily proven. Under the monopolistic conditions supposed, the laborers would, it is safe to assume, not be fully employed all the time; that is to say, they would be willing to work some more in order to get some more articles of consumption; that is to say, the articles of consumption which their wages offer them have so high a utility as to afford them a consumer's surplus,—the articles are worth more than they cost:[1] Q. E. D.

The initiated may fairly doubt the soundness of the chain of argument by which these heterodox theoretical results are derived from Mr. Clark's hedonistic postulates, more particularly since the adepts of the school, including Mr. Clark, are not accustomed to draw conclusions to this effect from these premises. Yet the argument proceeds according to the rules of marginal-utility permutations.

[1] A similar line of argument has been followed up by Mr. Clark for capital and interest, in a different connection. See Essentials, pp. 340–345, 356.

In view of this scarcely avoidable doubt, it may be permitted, even at the risk of some tedium, to show how the facts of every-day life bear out this unexpected turn of the law of natural distribution, as briefly traced above. The principle involved is well and widely accepted. The familiar practical maxim of "charging what the traffic will bear" rests on a principle of this kind, and affords one of the readiest practical illustrations of the working of the hedonistic calculus. The principle involved is that a larger aggregate return (value) may be had by raising the return per unit to such a point as to somewhat curtail the demand. In practise it is recognized, in other words, that there is a critical point at which the value obtainable per unit, multiplied by the number of units that will be taken off at that price, will give the largest net aggregate result (in value to the seller) obtainable under the given conditions. A calculus involving the same principle is, of course, the guiding consideration in all monopolistic buying and selling; but a moment's reflection will show that it is, in fact, the ruling principle in all commercial transactions and, indeed, in all business. The maxim of "charging what the traffic will bear" is only a special formulation of the generic principle of business enterprise. Business initiative, the function of the entrepreneur (business man) is comprehended under this principle taken in its most general sense.[1] In business the buyer, it is held by the theorists, bids up to the point of greatest obtainable advantage to himself under the conditions prevailing, and the seller similarly bids down to the point of greatest obtainable net aggregate gain. For the trader (business man, entrepreneur) doing business in the open (competitive) market or for the business concern with a partial or limited monopoly, the critical point above referred to is, of course, reached at a lower

[1] *Cf.* Essentials, pp. 83–90, 118–120.

point on the curve of price than would be the case under a perfect and unlimited monopoly, such as was supposed above; but the principle of charging what the traffic will bear remains intact, although the traffic will not bear the same in the one case as in the other.

Now, in the theories based on marginal (or "final") utility, value is an expression or measure of "effective utility"—or whatever equivalent term may be preferred. In operating on values, therefore, under the rule of charging what the traffic will bear, the sellers of a monopolized supply, *e.g.*, must operate through the valuations of the buyers; that is to say, they must influence the final utility of the goods or services to such effect that the "total effective utility" of the limited supply to the consumers will be greater than would be the "total effective utility" of a larger supply, which is the point in question. The emphasis falls still more strongly on this illustration of the hedonistic calculus, if it is called to mind that in the common run of such limitations of supply by a monopolistic business management the management would be able to increase the supply at a progressively declining cost beyond the critical point by virtue of the well-known principle of increasing returns from industry. It is also to be added that, since the monopolistic business gets its enhanced return from the margin by which the "total effective utility" of the limited supply exceeds that of a supply not so limited, and since there is to be deducted from this margin the costs of monopolistic management in addition to other costs, therefore the enhancement of the "total effective utility" of the goods to the consumer in the case must be appreciably larger than the resulting net gains to the monopoly.

By a bold metaphor—a metaphor sufficiently bold to take it out of the region of legitimate figures of speech—the gains that come to enterprising business concerns

by such monopolistic enhancement of the "total effective utility" of their products are spoken of as "robbery," "extortion," "plunder"; but the theoretical complexion of the case should not be overlooked by the hedonistic theorist in the heat of outraged sentiment. The monopolist is only pushing the principle of all business enterprise (free competition) to its logical conclusion; and, in point of hedonistic theory, such monopolistic gains are to be accounted the "natural" remuneration of the monopolist for his "productive" service to the community in enhancing their enjoyment per unit of consumable goods to such point as to swell their net aggregate enjoyment to a maximum.

This intricate web of hedonistic calculations might be pursued further, with the result of showing that, while the consumers of the monopolized supply of goods, are gainers by virtue of the enhanced "total effective utility" of the goods, the monopolists who bring about this result do so in great part at their own cost, counting cost in terms of a reduction of "total effective utility." By injudiciously increasing their own share of goods, they lower the marginal and effective utility of their wealth to such a point as, probably, to entail a considerable (hedonistic) privation in the shrinkage of their enjoyment per unit. But it is not the custom of economists, nor does Mr. Clark depart from this custom, to dwell on the hardships of the monopolists. This much may be added, however, that this hedonistically consistent exposition of the "natural law of final productivity" shows it to be "one of those universal principles which govern economic life in all its stages of evolution," even when that evolution enters the phase of monopolistic business enterprise,—granting always the sufficiency of the hedonistic postulates from which the law is derived. Further, the considerations reviewed above go to show that, on two counts,

Mr. Clark's crusade against monopoly in the later portion of his treatise is out of touch with the larger theoretical speculations of the earlier portions: (*a*) it runs counter to the hedonistic law of "natural" distribution; and (*b*) the monopolistic business against which Mr. Clark speaks is but the higher and more perfect development of that competitive business enterprise which he wishes to reinstate,—competitive business, so called, being incipiently monopolistic enterprise.

Apart from this theoretical bearing, the measures which Mr. Clark advocates for the repression of monopoly, under the head of applications "to modern problems of industry and public policy," may be good economic policy or they may not,—they are the expression of a sound common sense, an unvitiated solicitude for the welfare of mankind, and a wide information as to the facts of the situation. The merits of this policy of repression, as such, cannot be discussed here. On the other hand, the relation of this policy to the theoretical groundwork of the treatise needs also not be discussed here, inasmuch as it has substantially no relation to the theory. In this later portion of the volume Mr. Clark does not lean on doctrines of "final utility," "final productivity," or, indeed, on hedonistic economics at large. He speaks eloquently for the material and cultural interests of the community, and the references to his law of "natural distribution" might be cut bodily out of the discussion without lessening the cogency of his appeal or exposing any weakness in his position. Indeed, it is by no means certain that such an excision would not strengthen his appeal to men's sense of justice by eliminating irrelevant matter.

Certain points in this later portion of the volume, however, where the argument is at variance with specific articles of theory professed by Mr. Clark, may be taken up,

mainly to elucidate the weakness of his theoretical position at the points in question. He recognizes with more than the current degree of freedom that the growth and practicability of monopolies under modern conditions is chiefly due to the negotiability of securities representing capital, coupled with the joint-stock character of modern business concerns.[1] These features of the modern (capitalistic) business situation enable a sufficiently few men to control a section of the community sufficiently large to make an effective monopoly. The most effective known form of organization for purposes of monopoly, according to Mr. Clark, is that of the holding company, and the ordinary corporation follows it closely in effectiveness in this respect. The monopolistic control is effected by means of the vendible securities covering the capital engaged. To meet the specifications of Mr. Clark's theory of capital, these vendible securities—as, *e.g.*, the securities (common stock) of a holding company—should be simply the formal evidence of the ownership of certain productive goods and the like. Yet, by his own showing, the ownership of a share of productive goods proportionate to the face value, or the market value, of the securities is by no means the chief consequence of such an issue of securities.[2] One of the consequences, and for the purposes of Mr. Clark's argument the gravest consequence, of the employment of such securities, is the dissociation of ownership from the control of the industrial equipment, whereby the owners of certain securities, which stand in certain immaterial, technical relations to certain other securities, are enabled arbitrarily to control the use of the industrial equipment covered by the latter. These are facts of the modern organization of capital, affecting the productivity of the industrial equipment and its serviceability both to its owners and to the community.

[1] *Cf.* chap. xxii., especially pp. 378–392. [2] *Cf.* p. 391.

They are facts, tho not physically tangible objects; and they have an effect on the serviceability of industry no less decisive than the effect which any group of physically tangible objects of equal market value have. They are, moreover, facts which are bought and sold in the purchase and sale of these securities, as, *e.g.*, the common stock of a holding company. They have a value, and therefore they have a "total effective utility."

In short, these facts are intangible assets, which are the most consequential element in modern capital, but which have no existence in the theory of capital by which Mr. Clark aims to deal with "modern problems of industry." Yet, when he comes to deal with these problems, it is, of necessity, these intangible assets that immediately engage his attention. These intangible assets are an outgrowth of the freedom of contract under the conditions imposed by the machine industry; yet Mr. Clark proposes to suppress this category of intangible assets without prejudice to freedom of contract or to the machine industry, apparently without having taken thought of the lesson which he rehearses (pp. 390–391) from the introduction of the holding company, with its "sinister perfection," to take the place of the (less efficient) "trust" when the latter was dealt with somewhat as it is now proposed to deal with the holding company. One is tempted to remark that a more naïve apprehension of the facts of modern capital would have afforded a more competent realization of the problems of monopoly.

It appears from what has just been said of Mr. Clark's "natural" distribution and of his dealing with the problems of modern industry that the logic of hedonism is of no avail for the theory of business affairs. Yet it is held, perhaps justly, that the hedonistic interpretation may be of great avail in analyzing the industrial functions of the

community, in their broad, generic character, even if it should not serve so well for the intricate details of the modern business situation. It may be at least a serviceable hypothesis for the outlines of economic theory, for the first approximations to the "economic laws" sought by taxonomists. To be serviceable for this purpose, the hypothesis need perhaps not be true to fact, at least not in the final details of the community's life or without material qualification;[1] but it must at least have that ghost of actuality that is implied in consistency with its own corollaries and ramifications.

As has been suggested in an earlier paragraph, it is characteristic of hedonistic economics that the large and central element in its theoretical structure is the doctrine of distribution. Consumption being taken for granted as a quantitive matter simply,—essentially a matter of an insatiable appetite,—economics becomes a theory of acquisition; production is, theoretically, a process of acquisition, and distribution a process of distributive acquisition. The theory of production is drawn in terms of the gains to be acquired by production; and under competitive conditions this means necessarily the acquisition of a distributive share of what is available. The rest of what the facts of productive industry include, as, *e.g.*, the facts of workmanship or the "state of the industrial arts," gets but a scant and perfunctory attention. Those matters are not of the theoretical essence of the scheme. Mr. Clark's general theory of production does not differ substantially from that commonly professed by the marginal-utility school. It is a theory of competitive acquisition. An inquiry into the principles of his doctrine, therefore, as they appear, *e.g.*, in the early chapters of the Essentials, is, in effect, an inquiry into the competence of the main theorems of modern hedonistic economics.

[1] *Cf.* Essentials, p. 39.

"All men seek to get as much net service from material wealth as they can." "Some of the benefit received is neutralized by the sacrifice incurred; but there is a net surplus of gains not thus cancelled by sacrifices, and the generic motive which may properly be called economic is the desire to make this surplus large."[1] It is of the essence of the scheme that the acquisitive activities of mankind afford a net balance of pleasure. It is out of this net balance, presumably, that "the consumer's surpluses" arise or it is in this that they merge. This optimistic conviction is a matter of presumption, of course; but it is universally held to by hedonistic economists, particularly by those who cultivate the doctrines of marginal utility. It is not questioned and not proven. It seems to be a surviving remnant of the eighteenth-century faith in a benevolent Order of Nature; that is to say, it is a rationalistic metaphysical postulate. It may be true or not, as matter of fact; but it is a postulate of the school, and its optimistic bias runs like a red thread through all the web of argument that envelopes the "normal" competitive system. A surplus of gain is normal to the theoretical scheme.

The next great theorem of this theory of acquisition is at cross-purposes with this one. Men get useful goods only at the cost of producing them, and production is irksome, painful, as has been recounted above. They go on producing utilities until, at the margin, the last increment of utility in the product is balanced by the concomitant increment of disutility in the way of irksome productive effort,—labor or abstinence. At the margin, pleasure-gain is balanced by pain-cost. But the "effective utility" of the total product is measured by that of the final unit; the effective utility of the whole is given by the number of units of product multiplied by the

[1] Essentials, p. 39.

effective utility of the final unit; while the effective disutility (pain-cost) of the whole is similarly measured by the pain-cost of the final unit. The "total effective utility" of the producer's product equals the "total effective disutility" of his pains of acquisition. Hence there is no net surplus of utility in the outcome.

The corrective objection is ready to hand,[1] that, while the balance of utility and disutility holds at the margin, it does not hold for the earlier units of the product, these earlier units having a larger utility and a lower cost, and so leaving a large net surplus of utility, which gradually declines as the margin is approached. But this attempted correction evades the hedonistic test. It shifts the ground from the calculus to the objects which provoke the calculation. Utility is a psychological matter, a matter of pleasurable appreciation, just as disutility, conversely, is a matter of painful appreciation. The individual who is held to count the costs and the gain in this hedonistic calculus is, by supposition, a highly reasonable person. He counts the cost to him as an individual against the gain to him as an individual. He looks before and after, and sizes the whole thing up in a reasonable course of conduct. The "absolute utility" would exceed the "effective utility" only on the supposition that the "producer" is an unreflecting sensory apparatus, such as the beasts of the field are supposed to be, devoid of that gift of appraisement and calculation which is the hypothetical hedonist's only human trait. There might on such a supposition—if the producer were an unintelligent sensitive organism simply—emerge an excess of total pleasure over total pain, but there could then be no talk of utility or of disutility, since these terms imply intelligent reflection, and they are employed because they do so. The hedonistic producer looks to his own cost and gain, as an

[1] *Cf.* Essentials, chap. iii., especially pp. 51–56.

intelligent pleasure-seeker whose consciousness compasses the contrasted elements as wholes. He does not contrast the balance of pain and pleasure in the morning with the balance of pain and pleasure in the afternoon, and say that there is so much to the good because he was not so tired in the morning. Indeed, by hypothesis, the pleasure to be derived from the consumption of the product is a future, or expected, pleasure, and can be said to be present, at the point of time at which a given unit of pain-cost is incurred, only in anticipation; and it cannot be said that the anticipated pleasure attaching to a unit of product which emerges from the effort of the producer during the relatively painless first hour's work exceeds the anticipated pleasure attaching to a similar unit emerging from the second hour's work. Mr. Clark has, in effect, explained this matter in substantially the same way in another connection (*e.g.*, p. 42), where he shows that the magnitude on which the question of utility and cost hinges is the "total effective utility," and that the "total absolute utility" is a matter not of what hedonistically is, in respect of utility as an outcome of production, but of what might have been under different circumstances.

An equally unprofitable result may be reached from the same point of departure along a different line of argument. Granting that increments of product should be measured, in respect of utility, by comparison with the disutility of the concomitant increment of cost, then the diagrammatic arguments commonly employed are inadequate, in that the diagrams are necessarily drawn in two dimensions only,—length and breadth: whereas they should be drawn in three dimensions, so as to take account of the intensity of application as well as of its duration.[1]

[1] This difficulty is recognised by the current marginal-utility arguments, and an allowance for intensity is made or presumed. But the allowance admitted is invariably insufficient. It might be said to be insufficient by hypothesis, since it is by hypothesis too small to offset the factor which it is admitted to modify.

Apparently, the exigencies of graphic representation, fortified by the presumption that there always emerges a surplus of utility, have led marginal-utility theorists, in effect, to overlook this matter of intensity of application.

When this element is brought in with the same freedom as the other two dimensions engaged, the argument will, in hedonistic consistency, run somewhat as follows,—the run of the facts bring what it may. The producer, setting out on this irksome business, and beginning with the production of the exorbitantly useful initial unit of product, will, by hedonistic necessity, apply himself to the task with a correspondingly extravagant intensity, the irksomeness (disutility) of which necessarily rises to such a pitch as to leave no excess of utility in this initial unit of product above the concomitant disutility of the initial unit of productive effort.[1] As the utility of subsequent units of product progressively declines, so will the producer's intensity of irksome application concomitantly decline, maintaining a nice balance between utility and disutility throughout. There is, therefore no excess of "absolute utility" above "effective utility" at any point on the curve, and no excess of "total absolute utility" above "total effective utility" of the product as a whole, nor above the "total absolute disutility" or the "total effective disutility" of the pain-cost.

A transient evasion of this outcome may perhaps be sought by saying that the producer will act wisely, as a good hedonist should, and save his energies during the earlier moments of the productive period in order to get the best aggregate result from his day's labor instead

[1] The limit to which the intensity rises is a margin of the same kind as that which limits the duration. This supposition, that the intensity of application necessarily rises to such a pitch that its disutility overtakes and offsets the utility of the product, may be objected to as a bit of puerile absurdity; but it is a long time since puerility or absurdity has been a bar to any supposition in arguments on marginal utility.

of spending himself in ill-advised excesses at the outset. Such seems to be the fact of the matter, so far as the facts wear a hedonistic complexion; but this correction simply throws the argument back on the previous position and concedes the force of what was there claimed. It amounts to saying that, instead of appreciating each successive unit of product in isolated contrast with its concomitant unit of irksome productive effort, the producer, being human, wisely looks forward to his total product and rates it by contrast with his total pain-cost. Whereupon, as before, no net surplus of utility emerges, under the rule which says that irksome production of utilities goes on until utility and disutility balance.

But this revision of "final productivity" has further consequences for the optimistic doctrines of hedonism. Evidently, by a somewhat similar line of argument the "consumer's surplus" will be made to disappear, even as this that may be called the "producer's surplus" has disappeared. Production being acquisition, and the consumer's cost being cost of acquisition, the argument above should apply to the consumer's case without abatement. On considering this matter in terms of the hedonistically responsive individual concerned, with a view to determining whether there is, in his calculus of utilities and costs, any margin of uncovered utilities left over after he has incurred all the disutilities that are worth while to him,—instead of proceeding on a comparison between the pleasure-giving capacity of a given article and the market price of the article, all such alleged differential advantages within the scope of a single sensory are seen to be nothing better than an illusory diffractive effect due to a faulty instrument.

But the trouble does not end here. The equality: pain-cost = pleasure-gain, is not a competent formula. It should be: pain-cost incurred = pleasure-gain anticipated.

And between these two formulas lies the old adage, "there's many a slip 'twixt the cup and the lip." In an appreciable proportion of ventures, endeavors, and enterprises, men's expectations of pleasure-gain are in some degree disappointed,—through miscalculation, through disserviceable secondary effects of their productive efforts, by "the act of God," by "fire, flood, and pestilence." In the nature of things these discrepancies fall out on the side of loss more frequently than on that of gain. After all allowance has been made for what may be called serviceable errors, there remains a margin of disserviceable error, so that pain-cost > eventual pleasure-gain = anticipated pleasure-gain—n. Hence, in general, pain-cost > pleasure-gain. Hence it appears that, in the nature of things, men's pains of production are underpaid by that much; altho it may, of course, be held that the nature of things at this point is not "natural" or "normal."

To this it may be objected that the risk is discounted. Insurance is a practical discounting of risk; but insurance is resorted to only to cover risk that is appreciated by the person exposed to it, and it is such risks as are not appreciated by those who incur them that are chiefly in question here. And it may be added that insurance has hitherto not availed to equalize and distribute the chances of success and failure. Business gains—enterpreneur's gains, the rewards of initiative and enterprise—come out of this uncovered margin of adventure, and the losses of initiative and enterprise are to be set down to the same account. In some measure this element of initiative and enterprise enters into all economic endeavor. And it is not unusual for economists to remark that the volume of unsuccessful or only partly successful enterprise is very large. There are some lines of enterprise that are, as one might say, extra hazardous, in which the average falls out habitually on the wrong side of the account.

Typical of this class is the production of the precious metals, particularly as conducted under that régime of free competition for which Mr. Clark speaks. It has been the opinion, quite advisedly, of such economists of the classic age of competition as J. S. Mill and Cairnes, *e.g.*, that the world's supply of the precious metals has been got at an average or total cost exceeding their value by several fold. The producers, under free competition at least, are over-sanguine of results.

But, in strict consistency, the hedonistic theory of human conduct does not allow men to be guided in their calculation of cost and gain, when they have to do with the precious metals, by different norms from those which rule their conduct in the general quest of gain. The visible difference in this respect between the production of the precious metals and production generally should be due to the larger proportions and greater notoriety of the risks in this field rather than to a difference in the manner of response to the stimulus of expected gain. The canons of hedonistic calculus permit none but a quantitive difference in the response. What happens in the production of the precious metals is typical of what happens in a measure and more obscurely throughout the field of productive effort.

Instead of a surplus of utility of product above the disutility of acquisition, therefore, there emerges an average or aggregate net hedonistic deficit. On a consistent marginal-utility theory, all production is a losing game. The fact that Nature keeps the bank, it appears, does not take the hedonistic game of production out of the general category known of old to that class of sanguine hedonistic calculators whose day-dreams are filled with safe and sane schemes for breaking the bank. "Hope springs eternal in the human breast." Men are congenitally over-sanguine, it appears; and the production

of utilities is, mathematically speaking, a function of the pig-headed optimism of mankind. It turns out that the laws of (human) nature malevolently grind out vexation for men instead of benevolently furthering the greatest happiness of the greatest number. The sooner the whole traffic ceases, the better,—the smaller will be the net balance of pain. The great hedonistic Law of Nature turns out to be simply the curse of Adam, backed by the even more sinister curse of Eve.

The remark was made in an earlier paragraph that Mr. Clark's theories have substantially no relation to his practical proposals. This broad declaration requires an equally broad qualification. While the positions reached in his theoretical development count for nothing in making or fortifying the positions taken on "problems of modern industry and public policy," the two phases of the discussion—the theoretical and the pragmatic—are the outgrowth of the same range of preconceptions and run back to the same metaphysical ground. The present canvass of items in the doctrinal system has already far overpassed reasonable limits, and it is out of the question here to pursue the exfoliation of ideas through Mr. Clark's discussion of public questions even in the fragmentary fashion in which scattered items of the theoretical portion of his treatise have been passed in review. But a broad and rudely drawn characterization may yet be permissible. This latter portion of the volume has the general complexion of a Bill of Rights. This is said, of course, with no intention of imputing a fault. It implies that the scope and method of the discussion is governed by the preconception that there is one right and beautiful definitive scheme of economic life, "to which the whole creation tends." Whenever and in so far as current phenomena depart or diverge

from this definitive "natural" scheme or from the straight and narrow path that leads to its consummation, there is a grievance to be remedied by putting the wheels back into the rut. The future, such as it ought to be,—the only normally possible, natural future scheme of life,—is known by the light of this preconception; and men have an indefeasible right to the installation and maintenance of those specific economic relations, expedients, institutions, which this "natural" scheme comprises, and to no others. The consummation is presumed to dominate the course of things which is presumed to lead up to the consummation. The measures of redress whereby the economic Order of Nature is to renew its youth are simple, direct, and short-sighted, as becomes the proposals of pre-Darwinian hedonism, which is not troubled about the exuberant uncertainties of cumulative change. No doubt presents itself but that the community's code of right and equity in economic matters will remain unchanged under changing conditions of economic life.

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THE TAXATION OF INTANGIBLE WEALTH IN MARYLAND.

SUMMARY.

General considerations leading to a change in the method of assessment, 196–198.—Origin and history of former methods, 198–200.—Working of the new method, 201–203.—Further possibilities, 203–207.—Summary, 207–209.

I.

THE taxation of personal property—or at least that part of it commonly described as "intangible wealth"—is the storm center of current fiscal discussion in the United States.

The assessment of chattels and household effects, of mercantile stocks and industrial plants, of shares of stock of domestic corporations, and of locally employed capital of foreign corporations, presents difficulties not different in kind from the efficient valuation of real estate. It is when we leave the domain of things and come to the realm of rights, and have to do with stocks, bonds, and evidences of ownership not taxable "at the source," that the real difficulties occur. For here it is no longer the relatively simple elements of finance that confront us, but an intricate complex of finance and psychology,—escape from taxation, double taxation, jurisdictional conflicts.

So flagrant have been the lapses of intangible property assessment and so complete has been the breakdown of insistent attempts to associate intangible wealth with real estate and tangible personalty for identical taxation under the term "general property," that the pendu-

lum of expert opinion has tended to swing to quite the other end, and some of the most distinguished students of American finance have urged the complete exemption of such intangible property, and, as a means to that end, the separation of state and local sources of revenue, by constitutional amendment and legal enactment in so far as necessary.

It is hardly necessary to insist that these two proposals are in essence independent and distinct, and that, altho the provisions of the ordinary American state constitution would prevent the exemption of personalty, save as a corollary to the disassociation of state and local revenue, yet it by no means follows that the converse is true and that advocacy of such separation carries with it a necessary presumption in favor of exempting personalty.

Indeed, at this point expert counsel and public opinion have been in sharp opposition. The text-books writers have accumulated masses of graphic evidence as to the inherent depravity of the tax on intangible personalty, and have insisted on its complete elimination from the scheme of local taxation. On the other hand, public sentiment has been unwilling to tolerate the concrete fact of wealthy citizens, owners of stocks and bonds, enjoying all or many of the benefits of municipal service, and freed entirely from the onerous tax burden resting upon other forms of property.

It is not proposed, in this connection, to discuss the relative merits of these opposed views. Much has been left unsaid on both sides. Certainly, not a fraction of the actual evils attending the working of the tax on intangible wealth has been brought to light. But, on the other hand, its critics have made sad confusion of theory and practise, of principle and administration, and have cried out somewhat dramatically that the tax is bad,

because, attempted under unfavorable conditions, it has worked badly. More than this, insufficient emphasis has been placed upon the fact that an equivalent burden of taxation upon different classes of property does not necessitate an identical rate of taxation. Whenever, as in the contrasting cases of real estate and intangible wealth, tax liability, on the one hand, and tax immunity, on the other,—as represented by many years of actual tax administration,—have been virtually capitalized, fiscal justice is approximated rather than violated by differential rates.

Ten years ago the State of Maryland, through fiscal exigency rather than in consequence of scientific analysis, was supplied with a method of taxing so-called "intangible wealth," which in the decade of its operation, under but fairly efficient administration, has placed a steadily increasing assessment of such wealth upon the tax books, to the material betterment of the public treasury, to the appreciable relief of the over-taxed real estate owner, to the manifest improvement of local tax morality, and to the lessening of migration for tax purposes. The following pages are devoted to a description of this experiment and to an estimate of its results.

II.

The reckless participation of Maryland in various schemes of internal improvement in the decade from 1830 to 1840 resulted in the accumulation of a large and oppressive state debt. Direct taxation, hitherto distinctly an emergency resource, became in 1841 the only means of averting repudiation. The imposition of a general property tax was proposed, resisted, delayed, and finally effected by the passage on April 1, 1841, of "an act for the general valuation and assessment of property in this

state, and to provide a tax to pay the debts of the state." It authorized the first general reassessment of property in Maryland since 1812, and imposed a direct property tax for state purposes of 1-5 of 1 per cent.

The act of 1841 introduced the essential features of the modern property assessment system of Maryland,—the employment of a common basis for state and municipal taxation and the virtual absence of any periodic local reassessment. Subsequent revaluations of property primarily for purposes of state taxation were made in 1852, in 1858 (in Baltimore City), in 1866, and in 1876.

The results attained by the reassessment of 1876 remained practically the basis of state and local taxation for the next twenty years, during which time occurred no general revision of valuations. The respective boards of county commissioners in the counties, and the Appeal Tax Court in Baltimore, were indeed authorized to revise assessments from time to time, but no adequate equipment was provided therefor, and little was done beyond taking account of transferred titles, newly erected buildings, and fresh arrivals. The resulting conditions were exactly what might have been expected from an original faulty assessment, an entire absence of equalization, and a long period of neglected revision. The widest discrepancies in rate and manner of assessment manifested themselves as between county and county and as between counties and city, and the most intense resentment developed at the evident escape of personalty.

In the legislative campaign of 1892, reassessment was made a successful party issue. The General Assembly then elected promptly passed a radical reassessment law, of which the conspicuous feature was drastic provision for the listing of personal property. But so bitter was the outcry raised by propertied and mercantile interests in Baltimore and throughout the state that,

after a brief period of indecision, the governor vetoed the measure. Reassessment slumbered in 1894, but two years later the forces were again marshalled and the long-deferred revision was authorized.

This time the crucial point was met by simple compromise. Provision was made for a stringent tho less drastic listing and for biennial relisting. The bonds and certificates of indebtedness of all corporations and the shares of stock of foreign corporations were assessed at their actual market value and subjected to the full state tax (17¾ mills in 1896), as all other forms of taxable property. But in lieu of the ordinary municipal and county taxes, varying in rate from 6-10 of a cent to 2 cents, a fixed maximum charge of 3½ mills, or 3-10 of 1 per cent., was imposed for local purposes upon property so listed.

The motive of the adjustment was evident. County sentiment stood for a rigorous listing of personalty, and fortified its position by the declaration of the Maryland constitution of 1867, that "every person in the state, or person holding property therein, ought to contribute his proportion of public taxes for the support of the government, according to his actual worth in real or personal property." City sentiment, willing enough to take its chance with the old assessment law, but fearful of the severities of the proposed new law, stood firm in opposition, insisting that rigid listing meant either a greater premium upon perjury or the quick expulsion of local capital. In this juncture, imposition of the full state rate and a moderate maximum for local purposes were suggested as a fair compromise, and to it both parties assented rather than incur the risk of a second executive veto or the ultimate passage of a drastic measure.

III.

Turning now to the actual operation of the tax, attention will in this connection be confined to Baltimore City. There are several reasons for this, aside from the determining one that only in the case of Baltimore are sufficient data available. The counties publish no reports and make no return of their taxable basis other than a single undifferentiated aggregate to the State Tax Commissioner, published biennially. Moreover, Maryland is distinctly an agricultural state of moderate accumulated wealth. The only other local divisions likely to contain appreciable amounts of securities are Allegheny and Washington Counties—in which Cumberland and Hagerstown are respectively located—and Baltimore County, whose salubrious climate and lower tax rate have induced numerous wealthy persons engaged in business in Baltimore to acquire legal county residence. Finally, the method or utter lack of method in county assessment is such as to make it impossible to get any helpful light whatever upon the merits or defects of the tax itself.

Confining attention to Baltimore, it appears that for the year prior to the reassessment of 1896, securities—then liable to the full property tax—were returned in Baltimore only to the aggregate amount of $6,000,000. The reassessment of 1896 resulted for Baltimore City in a return of $58,703,795 of securities. Upon this was imposed 17¾ mills (the full rate) for state purposes and 30 mills for city purposes. By 1898 the original total had been slightly revised to $60,699,686. The biennial relisting, provided by the original measure, took place in 1898. It proved so complete a failure—the amount assessed rising only to $61,890,764—that a complete

change of system was made in 1900. The Appeal Tax Court (the municipal assessing board) was charged with the duty of continuous valuation and quinquennial revision.

The total assessed valuation of securities returned for the 1899 basis as $61,000,000 rose at once in 1900 to $65,000,000, and in subsequent years continued to rise until in 1907 it reached $150,000,000. The precise figures are as follows:—

1897	$58,703,795	1903	$94,336,562
1898	60,699,686	1904	85,971,333
1899	61,890,764	1905	104,221,227
1900	65,789,903	1906	120,423,814
1901	68,879,484	1907	150,947,733
1902	89,880,484	1908	146,688,857

It will thus be seen that in the ten years of its operation the taxable basis of intangible wealth, subject to the flat local rate of 30 cents, has increased from $58,703,795 to $146,688,857, or, roughly, 150 per cent. If the errors of the original assessment and the abnormal depreciation in securities of the last few months be eliminated, and comparison be had between the $58,000,000 of 1897 and the $150,000,000 of 1907, the result is a round increase of 170 per cent. During this same interval of ten years the total assessed valuation of other forms of personalty, excluding shares of stock of domestic corporations, but including tax-exempt manufacturing plants, increased only from $37,020,838 in 1898 to $39,232,866 in 1908, or 6 per cent. The movement in real estate during this same period was from $233,955,093 in 1898 to $325,723,818 in 1908, or 39 per cent. But an appreciable part of this more favorable showing was due to the unusual activity of the Appeal Tax Court in revising real estate valuations in the last three years. If the basis of comparison be made from 1897 to 1904, so as to exclude this period,

the results show an increase of 46 per cent. in securities and 9 per cent. in real estate.[1]

IV.

Both by reason of its absolute increase and of its relative amount as compared with the aggregate assessments of real estate and of other forms of personal property, the record of the tax on securities is apparently most favorable. When, however, we come to analyze the returns and to separate the aggregate basis into the several elements of which it is composed, a vista of further possibilities is disclosed. For this purpose the 1899 basis—as returned by the biennial revision of 1898—may properly be compared with the 1908 basis.

The total assessment of "securities" in Baltimore for the 1899 basis was $61,890,764. This was distributed among the 2,377 separate accounts. Of these 2,377 accounts, 6 accounts were corporations returning $1,990,752; 778 accounts were trust estates returning $18,404,241, and 1,593 accounts were individuals returning $41,495,771.

The total assessment of "securities" in Baltimore for the 1908 basis is $146,688,857. This aggregate is made up from precisely 3,300 separate accounts. Of these 3,300 accounts, 8 accounts are corporations returning $52,408,092; 1,011 accounts are trust estates returning $26,906,838, and 2,281 accounts are individuals returning $67,373,927.[2]

Leaving aside the figures relating to corporations and

[1] For further particulars as to the assessment of real estate and tangible personalty, see Report of the Advisory Committee on Taxation and Revenue, submitted to the Mayor of Baltimore (Baltimore, 1908).

[2] Of the securities assessed against corporations, about $4,000,000 is in dispute on points of law, with chances against the city being able to sustain the assessments. If this be allowed for, both in the corporation total and in the aggregate security basis, it would give the following percentages for the three terms: corporations 34 per cent.; trust estates, 19 per cent.; individuals, 47 per cent.

trust estates, as to which special conditions govern, it appears that from 1899 to 1908 there has been an increase of 43 per cent. in the number of individual accounts and an increase of 62 per cent. in the assessed value of the securities as returned.

Notable as is this result, it is very much less than it should be. That there are within the entire city limits of Baltimore, and out of its total population of at least 550,000 souls, only some 2,281 persons who own "securities"—whereas no less than 1,011 trust estates are so fortunate—is a manifest absurdity.

Such a return can only have one possible explanation; and that is, that the existing methods of assessment fail to secure anything like thorough return for purposes of taxation of such forms of wealth. When we review the course of such assessing activity in Baltimore, it becomes clear that this failure arises not from any inherent defect of the tax itself, but from the unsatisfactory method of its administration.

The general state assessment of 1897 seems to have been neither more nor less efficient, in the valuation of personalty, than any spasmodic assessment so conceived and administered will inevitably be. But, whatever results may have attended this reassessment, it is the common impression that the first biennial revision of personalty in 1898 was deficient in method and a failure in result. Many of the assessors should never have been appointed, and much of the work done was of so slipshod a character as to verge closely upon scandal. For several years thereafter a large part of the efforts of the Appeal Tax Court in the matter of personalty assessments is said to have been absorbed by the necessity of purging the tax books from the errors of the 1898 revision. It was undoubtedly this general dissatisfaction with the manner in which the biennial revision had been conducted, no

less than its failure to produce substantial results, that led the state legislature, at its first session thereafter, in 1900, to repeal the biennial revision and listing features and to substitute in lieu thereof, continuing revision and quinquennial reassessment.

There is no reason to suppose that the relisting of securities in 1898 was any more efficiently administered than the revision of general personalty. Indeed, from the greater delicacy of the task and the greater difficulty of its supervision, there is much reason for suspecting that the results were relatively even less favorable.

Unsatisfactory as they may have been, however, the results of the 1898 revision formed the basis of securities taxation for the next three years, with only such additions as accrued through the proneness of the Appeal Tax Court to pounce down upon unfortunate or unwary holders, heretofore untaxed. In 1901, however, under a new municipal administration the Appeal Tax Court made some deliberate effort to secure a larger return of securities for tax purposes. Starting at Centre Street, a wedge-shaped district extending east of Madison Avenue and west of the Falls, and widening north to North Avenue as far as Walbrook, and as far east as the York Road, was, in the course of 1901–03 "rescheduled"; that is, every house-owner in this district was served with a printed interrogation requiring a listed return of tax-liable securities. The results of this campaign were embodied in the increased basis of 1902, 1903, and 1904.

Since 1903 there has been comparative inactivity on the part of the Appeal Tax Court in the matter of assessing securities, or at least no systematic endeavor to maintain a continuing revision of present accounts. Vigilance has been shown in scheduling notorious individual cases, which for some reason or other have here-

tofore escaped. No small ingenuity has been displayed in tracing distributed estates or acquired capital or new issues of corporate obligations. After much effort the Supreme Bench has afforded access to its trust docket and to inventories of the Orphans' Court, and in other ways the basis has been materially enlarged. But the fact still remains that since 1898, with the exception of the rescheduling activity of 1901–03, itself partial and limited, there has been no systematic reassessment and no continuous revision in Baltimore of intangible wealth.

By this is not meant an endeavor to "drag the ponds" or to go through Baltimore with a fine-tooth comb, with a view to obtaining the listed return of every single bond or scrap of taxable stock. Such a procedure is manifestly Utopian in result, and the mere effort to realize it would mean a costly and offensive inquisition that would be repudiated after the briefest trial. It is the conspicuous absence of something very much less than this extreme procedure that is here noted. In consequence of an insufficient assessing force, it has been impossible to bring upon the tax books and to keep there, in reasonably close correspondence to actual values, anything like the aggregate volume of stocks and bonds which are now liable to taxation for local purposes at a rate commensurate with their income-producing capacity.

Within the last few months the municipality has awakened in some degree to a recognition of what may be accomplished in this direction. Additions have been made to the tax-assessing force for 1908, and a disposition has been shown to put into actual effect the provision of the city charter whereby every property assessment of Baltimore, whether real or personal, shall be subject to revision at least once in five years. If this new policy be carried into operation and if fidelity and

intelligence be displayed in its execution, the most favorable developments are to be anticipated.

V.

The situation might be summed up briefly as follows: the results obtained have been absolutely substantial, and relatively favorable, but they are very far from representing maximum possibilities. During the decade under consideration, Baltimore—the only city of size and wealth in the state—suffered a devastating conflagration, involving the destruction of many millions of tangible property and the necessary liquidation and conversion of considerable holdings of securities. The whole system of capital holding was disorganized, and only during the last two years has anything like equilibrium returned.

Moreover, the administration of the tax leaves much to be desired, both on the score of activity and efficiency. The whole basis of securities now upon the tax books, exclusive of the original listing, represents little more than the spasmodic efforts of an inadequate force working upon the problem at hand, under intelligent direction, but without systematic plan in pursuit. Beyond question better results are attainable. Any conceivable kind of tax would work poorly if similarly handicapped in administration. That under these conditions the results have been so favorable confirms the fiscal possibilities of the system under effective administration.

While the returns from the standpoint of the city's treasury have thus been far from satisfactory, the operation of the law has met with as much and as little favor at the hands of security holders as any form of personal taxation may expect to receive. That it is preferred to the old farcical endeavor to subject all such

property to the full city rate goes without saying. That it is deemed a not unfair distribution of the municipal burden is perhaps too much to state. All things considered, there seems a reasonable content, based in part upon appreciation of its necessity, in part upon fear lest it might be replaced by a worse substitute.

Whatever timidity operates to prevent a fuller return of securities seems to be inspired less by dissatisfaction with the burden of the present rate than the concern lest, when such property has been once assessed, the flat rate be repealed and the full city rate be imposed. In confirmation of this anxiety the well-known example of Connecticut in dealing with a somewhat similar device has been exploited. But, on the other hand, public sentiment seems to be crystallizing not only in favor of the tax as now imposed, but even to the point of recognizing that a breach of faith, or certainly a departure from sound policy, would be involved in any such change. At this juncture such a change is so remote as not even to be bruited, and from year to year, as the tax becomes more firmly intrenched and its results more favorable, the chance of any such course is likely to grow even less.

In short, there is no serious dissatisfaction with the operation of the device on the part of those directly affected, and there is expectation that, by keying up the whole tone of municipal tax assessment, substantially better things can hereafter be achieved for the city's interest. Subsequent experience may reveal defects or fallacies not now evident, but, if such be the case, amendment or repeal is entirely practicable. Considered as nothing more than a piece of fiscal opportunism, the Maryland device can properly engage the attention of those similarly circumstanced communities which are convinced of the unwisdom of further blunderbuss attempts to assess intangible wealth for full property taxa-

tion, and yet are not prepared to go to the other extreme of complete exemption. To these the method herein briefly described has, to the limited extent of its application, at least the merits of reasonableness in theory and a fair amount of success in practise.

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MACHINERY AND THE LABORERS.

SUMMARY.

Effect of new inventions upon laborer's income, 210–226.—*a*. Measured by an absolute standard, 210–211.—*b*. As compared with the income of the capitalist class, 211–226.—Effect on his person, 226–232.—*a*. Increasing demand for conformability, 226–228.—*b*. Reducing amount of routine mechanical work, 228–232.

In his excellent article on The Effects of Labor-saving Devices on Wages, in this Journal for November, 1905, Professor Johnson has not only anticipated many of my own conclusions, but has stated the matter so admirably that it would be superfluous to attempt another discussion of the points which he has covered. There are, however, certain aspects of the general problem which he did not attempt to expound, and these, together with the time which has elapsed since the publication of his article, must furnish whatever excuse is needed for the present paper.

The general conclusion reached by Professor Johnson is that "there is no logical basis for the view that every labor-saving invention must necessarily benefit the laborers in the long run." With this conclusion no one can quarrel after mastering the arguments upon which it is based. One might still maintain, however,—and Professor Johnson admits as much,—that the net result of all labor-saving inventions taken together has been some gain in the conditions of the laboring classes as a whole, and that it will *probably* continue to be so in the future. This gain, however, is a gain only when measured from some absolute standard; that is, the laborers are lifted somewhat higher above an absolute physical minimum

of subsistence than they were before these inventions were introduced or than they would have been if these inventions had never been introduced.

Hardly less important, however, than the question of the absolute improvement of the conditions of the laboring class is the question of its relative improvement as compared with other classes. Do the laborers gain as much as other classes (capitalists, for example) from these improvements in the arts of production? Do the advantages of industrial progress go mainly to the laboring classes or mainly to the capitalist and land-owning classes, or are they shared equally or proportionately? The peace of society depends almost as much upon this question as upon that of the absolute gain or loss to the laboring classes. The discontent of the laboring classes may be expected to increase, in spite of a rising standard of physical comfort, if they see that they are falling farther and farther behind other classes or that other classes are gaining more rapidly than they. This discontent is not likely to be allayed by demonstrating to them that they are several stages farther removed from physical want than their fathers and grandfathers were, so long as they believe that others are gaining more and entering more largely into the benefits of advancing civilization than they themselves are.

Professor Johnson's conclusion carries with it, as a matter of course, the conclusion that there is no necessary reason for believing that the laboring classes gain as much from an invention as other classes do. If the laborers do not necessarily gain anything whatever, obviously they do not necessarily gain as much as some one else, because somebody must gain if the invention is an improvement at all. But one observation made by Professor Johnson, sufficiently accurate when applied to the question which he had in mind, can scarcely be applied to the question

now before us. He remarks, "Since, then, labor-saving devices may vary so widely in their economic characteristics, it appears to be unscientific to group them together when it is our aim to discover their economic effects. Such a method of procedure may prove anything. Rather we should construct theoretical types possessing clearly defined characteristics which represent the various possible economic relations, and study the possible effects of each of these types." All this is true enough if the question in hand is whether each and every labor-saving improvement must necessarily benefit the laboring classes. This question is definitely answered in the negative when one clearly defined type of improvement is found to confer no benefit whatever upon the laboring classes. But, if the question is, Are laborers as a matter of fact gaining or losing as a result of the sum total of all the industrial improvements? it is necessary to consider the improvements as a group. If the question relates merely to the absolute improvement of their condition, the answer is so obviously in the affirmative as to need no discussion. But it is otherwise with the question of their relative improvement. Upon this point there is considerable difference of opinion. Some go so far as to maintain that, in the long run at least, the advantages of improvement go chiefly to the laborers,[1] while others are equally positive in the opinion that practically the whole advantage goes to the capitalist or to the land-owner.[2] Between these extremes there is room for every possible variation of opinion.

It is interesting to notice that even the strongest theoretical arguments in favor of the proposition that in the end the laborer gains from labor-saving inventions are

[1] *Cf.* J. B. Clark, Distribution of Wealth, p. 412; also publications of the American Economic Association, 3d series, vol. iv. pp. 130–142. *Cf.*, also, F. A. Walker, The Wages Question.

[2] For example, Karl Marx and Henry George.

equally strong in favor of the proposition that the capitalist gains still more. Take, for example, the oft-repeated illustration of a "product-multiplying invention." This is an invention which, at first substituting machinery for labor, so cheapens the product that consumers buy more of it, so much more that in the end more laborers are employed in its production than before. There is thus a direct increase in the demand for labor in the industry in question, besides the advantage to the laboring class as a whole through the cheapening of the product. Now machinery is capital, and the substitution of machinery for labor is the substitution of capital for labor. This means that when the labor-saving device is introduced, the ratio between the labor and the capital employed in the industry is changed, capital assuming a relatively larger and labor a relatively smaller rôle. In the manufacturing of a given unit of product, more capital and less labor are used. Otherwise, it is not a labor-saving device.[1] If the total product is so increased as to require more labor in the aggregate than before, the increase in the quantity of capital required will necessarily be still greater.

This is a mere matter of arithmetic. Let us assume that before the introduction of a certain labor-saving invention in a certain industry it required normally, and on the average, 100 laborers and $5,000 worth of capital to manufacture 1000 units of product, and that, after the invention is in use, 50 laborers and $6,000 worth of capital can manufacture the same quantity, namely, 1,000 units. If the consumption should so increase through this cheapening process that 3,000 units would be demanded where 1,000 units had been before, it would now require 150 laborers, or there would be a net gain of 50 per cent.

[1] Some inventions, it is true, are capital-saving rather than labor-saving, but these will be considered later.

in the demand for labor. But, at the same time, to manufacture the increased product would require $18,000 worth of capital as against the $5,000 worth which had been required before,—a net gain of 360 per cent. in the demand for capital. If we assume that conditions in other industries remain unchanged, the net result of this invention will be to increase the demand for capital in the whole community more than proportionately to the increase in the demand for labor and to give the capitalist class the larger share of the advantages of the improvement.

If the product is an article consumed alike by laborers and capitalists, both will gain alike as consumers through this cheapening. If it is consumed mainly by the laboring classes, their gains as consumers will be greater than those of capitalists, and this may help to even up the comparative advantages to the two classes. But if, on the contrary, it is an article consumed mainly by the capitalist classes, their superior gains from the side of production would be accentuated from the side of consumption. If, however, we consider the question of improvement in general, the benefit from the standpoint of consumption through the cheapening of consumers' goods must be assumed to go to one class as often as to the other. Therefore, we may eliminate entirely the question of advantages to consumers.

In order that an invention may be "product-multiplying" rather than "labor-displacing," there must be an elastic demand for the product. In other words, a moderate fall in its price must occasion a considerable increase in the amount consumed. If, on the other hand, the demand is inelastic,—that is, if it takes a considerable fall in price to occasion a small increase in the amount consumed,—there is no reason to suppose that any more labor (or even as much) would be required in the industry

in question after the labor-saving invention was introduced than before. This, of course, would depend upon the degree of inelasticity shown by the demand. But it is pretty certain that more capital will be used, assuming that the invention is a labor-saving rather than a capital-saving device. There is no reason to suppose that any cheapening of the product would actually reduce the amount consumed. And, if even the same number of units of product are required after the improvement as before, more capital would be used in their production, since one effect of introducing the labor-saving device is to require more capital and less labor in the production of each unit. Here, therefore, would be a case where, from the side of production at least, capital would gain and labor lose, not only relatively, but absolutely.

As already suggested, some inventions are capital-saving rather than labor-saving. These may be grouped under two classes: first, labor-saving improvements, introduced into the manufacture of machinery and other forms of capital; second, inventions which enable a cheaper kind of machine to displace a more expensive kind. An invention of the first type, tho labor-saving rather than capital-saving in the industry where it is itself employed, becomes capital-saving rather than labor-saving for the industry in which its product is used. Electric cranes and other labor-saving devices in a rolling mill for the manufacture of steel rails will serve as an illustration. In the rolling mill they are labor-saving devices pure and simple; but steel rails are a part of the capital of the railroad, and, in so far as these improvements make rails cheaper, they save capital to the railroad company. They enable the company to construct its road and maintain it at a given standard of efficiency at a lower cost than would otherwise be possible. Since our quantitative notions of capital are always expressed

in terms of value, when there is less value in the rails, there is less capital in the road, other things being equal. That is to say, capital is saved by cheapening the price of steel rails.

An invention of the second type looks at first glance like a capital-saving device, pure and simple. Logically, however, it does not differ so very much from an invention of the first kind. Inventing a new and cheaper machine to do the work formerly done by an expensive machine has about the same effect, so far as our problem is concerned, as inventing a cheaper way of making the older machine. The reason the new machine is cheaper than the older one is probably because it takes less labor to make it. When this is the case, it resembles in all essential particulars the cheapening of the process of making the older machine. In both cases, labor is saved in the industry which supplies productive goods to another industry, but capital is saved in the latter industry. The general result in either case is a saving in both labor and capital to the community as a whole. Whether the saving of labor is greater than that of capital or *vice versa* is impossible to say off-hand. That question depends upon a great variety of circumstances. Fortunately, it is not necessary to our purpose that this question be answered in any individual case. The most that can be said in advance is that it is extremely unlikely that the margin of difference in favor of the laborer, if there is such a margin at all in these classes of inventions, will be large enough to overbalance the very distinct margin in favor of the capitalists in those classes of inventions which are merely labor-saving and not capital-saving in any sense.

We have still to consider the possible case of an invention which is merely capital-saving and not labor-saving in any sense. This would be an invention which would substitute a cheaper for a dearer form of capital,

and which would effect the cheapening of the new form without any saving of labor in its production. Such a thing appears impossible, and would certainly be very difficult to find in actual fact. But there may be certain cases which look like it. It is possible, for example, that coal might become cheaper, not through any saving in the labor of mining or transporting it, but through the discovery of new sources of supply, thus reducing the monopoly profits which now form a part of the present price. That is to say, the labor cost of producing a ton of coal might be as high as before, but the price might fall, and the reduction in price come out of the profits of monopoly. This cheapening of coal might in turn cheapen the production of certain forms of capital without any reduction in the labor of making them. So far the result is wholly due to a new discovery of natural resources rather than to an invention. But the cheapening of fuel may make practicable a certain type of machine which had formerly been impracticable.

Let us suppose that, in the making of machine A, the labor cost is 50 and the capital cost is 50, of which the fuel cost is one-fifth, or 10, making a total cost of 100: whereas, in the making of machine B, the labor cost is likewise 50, but the capital cost is 60, of which the fuel cost is two-thirds, or 40, making a total cost of 110. A is the cheaper machine, and, assuming that they are equally efficient, A will be used in preference to B. B will not appear in actual use at all, even tho its concept might exist in the mind of an inventor and a model of it might be on exhibition in various places. But a fall of 50 per cent. in the price of fuel would reduce the cost of A to 95 and that of B to 90. B would now be the cheaper machine, and would come into actual use as a substitute for A. Capital would be saved to the factories using these machines, and this saving of capital would not be accomplished by

any saving in labor. This appears, outwardly at least, to be an economy resulting from the substitution of a cheaper for a dearer machine, tho in reality it is directly traceable to the discovery of a new coal field, and therefore should be excluded from consideration.

In fact, if we rule out the influence, direct or indirect, of discoveries of new lands and natural resources, it would be difficult to imagine any mechanical invention which could prove economical without saving labor somewhere. If there are such cases, they must be so rare as to have little influence on the net result of inventions in general. We must expect, therefore, to find that the net result of all inventions is and has been to save labor more than to save capital, or to increase the employment of capital more rapidly than that of labor. This means that, as the result of inventions alone, capital comes to play a larger and larger rôle in industry.

This is capable of being tested statistically, tho, so far as the writer is aware, no such statistical test has yet been applied. In the absence of such a test, we must rely upon general observation. Few observers would deny that more capital is actually used in connection with each unit of labor, say with each laborer, now than before the rise of the present régime of machine industry; nor are many likely to deny that the proportion of capital to labor is still increasing with every advance in mechanical invention. It is doubtful if a single industry can be found in which the amount of capital used by each laborer has diminished in recent times, while the almost universal rule has been an increase of capital out of proportion to the increase of labor.

There can be but one conclusion drawn from these facts, if they are admitted to be facts; namely, that the opportunities for those who are in a position to supply capital have increased more rapidly than the oppor-

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May mean increased saving, with no increase in demand, effect as result of lower price of capital.

tunities for those who are in a position to supply only their labor. In other words, the progress of invention has caused a shifting in the relative demand for the services of the different classes in the industrial world. The services of the manual laborers, especially of the lower classes where mere muscular strength is an important element in their productiveness, are becoming of less relative importance, but the services of those who supply capital, as well as of engineers and others who supply certain high types of labor, are becoming relatively more important. Stated negatively, one result of this mass of inventions has been that a manual laborer of the lower grades can be spared with less relative loss than formerly, because his work can now be done by machines, while the loss of a given amount of capital, now that we have so many uses for it, would occasion a relatively greater loss than would have been the case if there had been fewer inventions. Under strictly democratic institutions, the world rewards most highly those whom it most needs, or at least those whom it thinks it most needs. One result of invention is to reduce the need, relatively at least, for muscular energy and for every form of mechanical work which can be reduced to routine. Machines can furnish these elements of production; but the use of machines increases the relative need for the services of those who supply capital,—that is, of the capitalists. In somewhat technical language the general result of inventions is to reduce the marginal productivity of the lower grades of labor and to increase that of capital.

The growing demand for capital may possibly, it is true, be supplied by any one who has the foresight to anticipate it. But new capital can only be supplied by waiting, by deferring consumption, by saving something out of present income. This is obviously difficult

to do if one's income is small, and becomes practically impossible when one's income will supply only the necessaries of life, while it becomes relatively easy as one's income increases. Generally speaking, the larger one's income, the easier it is for one to increase one's capital. Therefore, the people who are in the best position to take advantage of the growing demand for capital which results from inventions are those whose incomes are already largest. "To him that hath shall be given."

It may perhaps be argued that even tho the gain from use of machinery seems to go first to the wealthy classes in the form of increased incomes, yet it eventually finds its way to the laborers through the expenditure of these incomes. This is an argument which figures in popular rather than scientific discussion. Probably no writer to whom the term "scientific" could be applied, certainly none of those already cited, would use it, but it plays such a part in pseudo-scientific discussion as to demand notice. In the first place, "it is a poor rule that will not work both ways." If an increase in the incomes of the capitalists works eventually to the advantage of the laborers through the expenditure of those incomes, it would seem also that increased incomes for the laborers would work eventually to the advantage of the capitalists. When the income is spent in purchasing goods, it does not matter who receives and who spends it,—it does not matter whose income it was. It goes to all those who get part of the price of the goods purchased; that is, to both capitalists and laborers. But it is not necessary to bring in any consideration of this kind. The whole matter is very simple, when looked at properly.

Let us assume that the total income from a certain industry is $100 per day, of which the capitalists get $75 and the laborers $25. There is then a total of $100 to be spent for other goods, and this $100 will set labor and

capital to work producing them. But there would be exactly as much expended if the figures were reversed, and the laborers got the $75 and the capitalists the $25. Given a total income from the industry, it makes no essential difference to the rest of society how it is divided between labor and capital. It will do the rest of society exactly as much good if the laborers in this group get the $75 as if the capitalists get it; but it makes a great difference to the laborers themselves in this particular group.

Another argument equally misleading is that, while the general rate of wages has risen, the rate of interest has fallen. As an objection to our conclusion that the capitalist class has gained more than the laboring class as the result of modern improvements, this looks plausible. In reality, however, it has three fatal weaknesses. In the first place, tho the *rate* of interest has fallen, the *gross amount* of interest has risen. The opportunities for the use of capital have so expanded as to make it possible for a considerable portion of the community to live entirely from the income of its capital. Before the régime of machine production, the opportunities for the use of capital were so limited that it was practically impossible for any considerable number to make a living as mere capitalists. It was usually necessary for each would-be capitalist to combine the function of a laborer with that of the capitalist. It was this aspect of the case which led Karl Marx and some of his admirers into the mistaken notion that capital in the modern sense came into existence with the rise of the factory system. Of course, capital existed in the same sense as now, as far back as there were tools; but, so long as there were very few and simple tools, there was no room for any one to own and manipulate sufficient capital to make a living from it alone, without combining also the function of the laborer. But the régime of machine production

has so enormously increased the opportunities for the use of capital that it became possible to separate the function of the capitalist from that of the laborer. In other words, it became possible for certain men to own and manipulate enough capital to enable them to live from its income alone. In this sense, the capitalists, as a distinct class in society, may be said to have come into existence with the rise of the modern factory system, tho capital had existed always. It has also become advantageous to use capital in large aggregates, and this has given a phenomenal growth to the joint-stock principle, and this in turn has stimulated the multiplication of paper evidences of joint ownership. These are sometimes mistakenly called capital, and have even led certain economists astray as to the nature of capital.

The real point is very well illustrated by the example cited by Professor Marshall, of certain money-lenders in London and Paris, who lend small amounts at 10 per cent. per day to costermongers.[1] This rate is enormously high, but the amount which can be loaned is so small that the lenders themselves cannot become opulent. In a more primitive condition the operations of the capitalist resembled these rather than the stupendous operations of the present-day capitalist. Tho the rate of interest was high, the amount of capital which any man could handle and find employment for was so small as to keep the capitalist class from coming into existence as such, or at least to keep it from attaining to any considerable importance. In spite of the fall in the rate of interest, the capitalists as a class are vastly better off under present conditions, and these conditions have been largely brought about by the era of mechanical invention.

The second fallacy in the argument that the fall in the rate of interest indicates that the capitalists have

[1] Principles of Economics, p. 589. 5th edition. London, 1907.

lost rather than gained under modern conditions lies in a misunderstanding of the meaning of a rate of interest. A rate of interest is a deceptive thing. It is, as Böhm-Bawerk has shown, merely a ratio between the valuation of present and future goods. If I possess a given fixed income, say of $1,000, from the ownership of some form of property, the rate of interest will be high or low according as I evaluate the property which is the source of this income. If I and others in my community have so little appreciation of the future, or if we so much prefer present over future goods that we prefer $10,000 now to an income of $1,000 per year through the future, the rate of interest will be high; that is, above 10 per cent. If, on the contrary, the average member of the community prefers the annual income of $1,000 to $20,000 in cash, the rate of interest would be low (that is, below 5 per cent.), tho the income would be precisely the same in both cases. The difference would be that in the one case the value of my property would be estimated at $10,000, and in the second case at $20,000. It would be the same property, would yield the same income, but would yield a lower rate of interest in the latter case merely because it was evaluated more highly.

To be sure, if $10,000 has been the normal valuation of my property, and if it is some form of capital rather than land, presumably $10,000 is what it would cost to reproduce it. In that case a rise in the appreciation of the future would, at first, tend to give this capital a higher present selling value. But this would stimulate the production of other instruments to compete with mine. If the cost of producing them remains at $10,000, so many will be produced and put into operation as to reduce my income to $500. In that case I will have the same capital, and also as much capital, measured in dollars, as before, but my income will be cut in half. That is

to say, if the appreciation of the future should so increase as to make a property yielding an income of $1,000 sell for $20,000 instead of $10,000, it would also make a property yielding $500 sell for $10,000. Since capital is capable of reproduction, my particular form of capital will be duplicated until its annual yield will be only $500, since this, capitalized at the new rate, will give it a selling price high enough to cover its cost of production. In case my income were derived from land, however, which could not be reproduced, the annual yield would remain at $1,000, and the capitalized value of the land would rise to $20,000, and remain there.

Finally, even tho the actual return per unit of capital should have fallen, it would not invalidate our argument. The fall in the return per unit is the result of the enormous increase in the quantity of capital. But the employment of this enormous quantity at any rate of interest would not have been possible, had it not been for the inventions of machinery. Imagine our trying to use enough old-fashioned hand tools to make up an aggregate of capital equal to that which is now in use! Their marginal productivity would probably have been something less than zero.

The argument seems conclusive that the general results of inventions of machinery have been more to the advantage of the capitalist class than of the laboring class, especially if we include only the wage-workers under the latter class.

The justice or the injustice of this result depends upon certain broad questions in social philosophy. It has often been observed that sweeping social changes produce results which are hard to justify. Men of admirable personal qualities, men who were the epitome of all that made men great in the conditions that were passing away, have sometimes been forced to the wall under new con-

ditions. They have failed under the new tests because, in spite of their many excellences when measured by older standards, they were not the kind of men for whom the new time was calling. Many a man, for example, who was well fitted for life in a pioneer community has failed miserably after the pioneer conditions had given place to conditions of settled industry. Possessing physical courage, hardihood, marksmanship, and a knowledge of woodcraft, he has supplied the qualities needed in pioneer life; but, lacking patience, sobriety, foresight, and the capacity for steady work, he has gone to the social scrap-heap when these qualities were absolutely required. We may sympathize with such men and do what we can to ameliorate their condition, but it would be fatal to attempt to modify our social system in such a way as to preserve them from the results of progress. That would be like trying to preserve the use of the wooden plow and the hand loom.

Similarly, the man who only possesses muscular strength and manual dexterity (that is, the man who is only capable of doing what a machine can do), however much we may admire him personally and however useful he may have been in a former state of society, is coming to be less needed. He is no longer "the man of the time." And it would be a disastrous social policy to attempt to shield him against the results of progress. That would be an attempt to preserve a type of man who was no longer needed, at the expense of a type for whom there was a growing need. The growing need is for the man who can invent and also for the man who can initiate the process of machine production. The world will be better off when everything of a purely mechanical and routine nature is done by machinery and when there are no men left who are only capable of doing what machines might very well do. The process of eliminating this type of

man, however, will be a painful process, accompanied by protests and by rebelliousness in spirit, if not in act. The obvious thing to do is to provide the best possible educational facilities, and in the broadest sense, in order that each succeeding generation of young men may have the fullest and freest possible opportunity for evading those occupations which are destined to be taken over by machines and of entering those occupations where the machine helps the man rather than competes with him. If such opportunities can be amply provided, it is to be hoped that the majority of each rising generation will be able to evade the conflict with the machine. But it is also probable that a certain number will not be able, for constitutional reasons, to avail themselves of these opportunities. Such individuals will be doomed to hardship for the simple reason that they will be useless, or almost useless, members of society. Even tho they may possess the most admirable moral dispositions, they will belong to a type of man whom society can very well spare. Neither socialism nor any other scheme would make them other than useless or almost useless members of society. And any scheme, whether labelled "socialism" or by other name, which would preserve these men from the normal results of their relative uselessness by allowing them ample incomes, would be burdening the rest of society for their support, however carefully this bald fact might be hidden under the guise of pseudo-ethical formulæ.

Thus far the discussion has been confined wholly to the influence of machinery upon the laborer's income. We have yet to consider its influence upon the laborer himself. This question merits most careful study and investigation. But up to the present time it has received more attention from popular agitators and moralists than from

professional economists. Among popular agitators it is very frequently assumed that the influence of machinery is to the disadvantage of the laborer's person, aside from its effect upon his wages. It is commonly charged, for example, that the machine tends to dominate the man, that the laborer tends to become a slave of the machine rather than its master.

Just what is meant by becoming the slave of a machine would be difficult to state, and it would become more and more difficult the more one knew about men and machinery. In so far as it means that the conditions of modern machine production are more exacting, in certain ways at least, than more primitive conditions were, it is a mere truism. That is one of the penalties of civilization, and it applies to all classes of society, not to the wage-workers alone. When each one worked independently with detached tools, he was, in a sense, more independent than he can possibly be when he works with a machine which is locked together with a large number of other machines into a system. It is no longer possible for each one to choose his own time for working and resting. He must adjust his working and resting hours to those of the whole group, nor can he work at what speed he chooses. His speed is usually set for him by the machine, and he must adapt himself to it. But this applies in very much the same way to the banker, the merchant, and the manufacturer. They must keep definite office hours, they must travel when trains run and not when they choose, they must take their meals when others do and not when their stomachs prefer, and in a thousand different ways they must conform to the average convenience of the whole social group. While this does require adaptation to a set of circumstances which did not exist under more primitive methods of industry, and while it puts a premium upon certain physical, mental, and moral

qualities which were formerly of less relative importance, it cannot be said to be the result of machinery alone nor to affect the laborers alone. It is a necessary result of a more complex organization of society. Therefore, the charge against the machine as the enslaver of the laborer may be dismissed in so far as it merely means that it makes exacting demands upon him and requires him to conform to the average convenience of the whole group to which he belongs. That is a condition which affects everybody.

But these exacting demands upon conformability do doubtless work some hardship, not only to certain wage-workers, but to others also. A new principle of selection is introduced as a factor in social evolution. The erratic individual, however ingenious or energetic he may be in a spasmodic way, who can only work when the notion strikes him, is of little use in a society which demands steady, constant, patient routine work. And such an individual will seldom prosper. If he is a laborer, he will usually gravitate toward the army of tramps. If he belongs to some other class, he will probably join the army of adventurers who hang about the outskirts of business,—curbstone speculators, small politicians, petti-fogging lawyers, labor agitators, and so forth. All are rejected by the conditions of our interlocking industrial system whose demand is for that kind of efficiency which is coupled with conformability, and the men who possess this kind of efficiency gradually work their way to the front and crowd out their more erratic competitors. As illustrations of this tendency, one need only mention the growing demand for sobriety, not alone in locomotive engineers, but in every class of labor where drunkenness or other forms of unreliability may endanger lives and property, or even work to the inconvenience of the group of workers to which the individual belongs.

In so far as the somewhat impressionistic statement,

that the laborer becomes a slave of the machine, merely expresses an instinctive feeling that the laborers have not benefited as much from machinery as was expected or that they are not served by machinery as much as other classes are, no very fundamental objection can be urged against it. But it is at least open to the objection of being an inaccurate and misleading way of stating the matter. But there can scarcely be any doubt that more is meant than we have yet considered. It is pointed out with a good deal of particularity that the operation of certain machines requires a constant repetition of certain simple movements of arm, wrist, or fingers, day in and day out, and it is argued that such work tends to make the operator a mere automaton, that he becomes merely a part of the machine. But the tendency in all such cases is for these automatic operations to be themselves taken over by the machine as fast as the inventors can bring it about. This relieves the operator more and more of the work of an automaton, leaving him freer to direct and control the machine. Thus the cure for this particular difficulty is found in more machinery rather than in less; that is, in the elaboration and completion of the machine and in the extension of its function rather than in doing away with it altogether.

It is an undoubted fact that the tendency is more and more for these purely mechanical and automatic operations to be taken over by the machines, and it is safe to predict that eventually every kind of work which can be reduced to a mechanical and routine form will be done by machines. This will relieve machinery of the specific charge of reducing the operator to a mere automaton; but, on the other hand, it will make the conditions of life even harder than they now are for those who are constitutionally unfit for any other kind of work. They will then all have to be relegated to the human

scrap-heap instead of being paid the somewhat meagre wages which they now receive.

Looked at broadly, is the average work of a laborer in a machine industry less dignified, less agreeable, less humanizing, than it was before the industry reached the machine stage? From the nature of the question, it is dangerous to dogmatize, because neither the affirmative nor the negative is capable of being demonstrated. The negative view seems to rest mainly upon the assumption that it is more dignified to be occupied with a great many purely mechanical operations than with a very few. The old-fashioned shoemaker, for example, was largely occupied with purely mechanical operations, most of them of a very elementary nature such as a machine can do quite as well as a man. Each of these operations required great concentration of attention, leaving him very little opportunity for other forms of mental activity. He was the slave of each particular task as truly as a modern machine worker can be said to be the slave of his single task. But the old-fashioned shoemaker had to turn from one kind of work to another. This increased the difficulty, and, on the whole, required of him a greater amount of concentration than is now required of the operator of a machine. The latter, who has but one routine task to learn, learns it easily, and can carry it out without very intense concentration of mind. His mind, therefore, would seem to be freer than that of the old hand worker, tho there was more variety to the work of the latter. Whether this greater variety is to his advantage or disadvantage would be difficult to determine offhand. It looks as tho the operator of a machine in a shoe factory, being relieved of the necessity of acquiring several forms of specialized manual dexterity, would be in a better position for free mental activity than the old-fashioned shoemaker.

Perhaps it is not a fair test, but, if any one will look for an old-fashioned shoemaker (and they are still to be found), and watch him at his task, and then go to a shoe factory and watch the various workers at their tasks, and compare the apparent mental alertness of the two types of workers, their interest in their surroundings, their physical and mental buoyancy, their general intelligence, as shown by the uses they make of their leisure hours, he will probably be forced to the conclusion to which the writer has been driven; namely, that the balance is decidedly in favor of the machine. Leaving out, to repeat, the question of earnings, the machine worker appears to have a more agreeable, more dignified, and less dehumanizing (if such an expression is ever appropriate) task than the old-fashioned hand worker. The reason is perhaps, first, that the machine relieves the worker of the most mechanical and least human parts of the work, leaving only the less mechanical and more human parts to be done by men; second, that the mere contemplation of an efficient but intricate machine at work is a source of mental training to any mind which is capable of understanding it. To the man who actually operates the machine and comes gradually to understand the interrelation of all its parts and the adaptation of each part to the work for which it was intended, the operation of the machine becomes positively a means of education. If he has any power of invention, that in turn is stimulated, as shown by the fact that many of our best inventions have come about through the insight of the operators themselves. The man who is not educated by this method is a man who would be the slave of any kind of a task—if a man can ever be the slave of a task.[1]

[1] The writer would not, even if he could, dissipate the dreams of the enthusiast in the arts and crafts movement, which is, in part, a protest against machine production. As the opening up of another field for artistic expression, added to the field of the traditional fine arts, the movement is deserving of the warmest

Our conclusion is, therefore, that, altho the laborer's income has not been increased by the invention of labor-saving machinery of various kinds as much as other incomes have been, the conditions of the laborer have been ameliorated in other ways which help to compensate him for his relative loss. Tho from the standpoint of income he seems to be falling farther behind other classes (even tho he be gaining absolutely), yet his work is growing lighter, more dignified, more human. While he is still far behind the engineer and the business and professional men in this one particular, yet he has gained in this particular rather more than they have through the introduction of machinery. The lawyer's task is very much the same as it always was, tho he is perhaps relieved somewhat by the typewriter and other office paraphernalia. Similarly, with the physician, the teacher, the engineer, the banker, the business man. Tho their tasks are all much more agreeable than that of the laborer, there is not so much difference as there once was, and it is to be hoped that the difference will still further diminish.

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welcome, but as a means of salvation for the laboring classes it seems not only to be futile, but based upon an improper diagnosis of the real conditions. The advocates of this movement are most insistent in asserting the degrading effect of the machine, but they overlook the fact that a machine cannot degrade any one who has intelligence enough and artistic ability enough to profit by the arts and crafts idea. The only man whom this movement can save from the machine is the one who does not need salvation; that is, who would, from his very constitution and nature, be the master rather than the slave of a machine. Moreover, while the machine product may be inferior, artistically at least, to the product of a real artist according to the arts and crafts standard, it is generally very much superior to anything which could be made by hand by any worker who is capable of being dominated by a machine.

THE STREET RAILWAYS OF PHILADELPHIA.[1]

SUMMARY.

The original franchises, granted fifty years ago, and all subsequent grants, were subject to the ordinance of 1857, reserving to the city the right to purchase at original cost, and putting on the companies certain obligations, 233–236.—Rights of the public were also protected by a dividend tax (236–238) and by the ordinances of 1893–94 stipulating that the companies shall remove overhead trolley wires whenever required to do so by ordinance, 238–241.—An ordinance of 1907 frees the companies from all old restraints and obligations, (241–246).—The original franchises have acquired great value, 246–248.—Capitalization was much increased during the period of consolidation and stock-watering, 248–257.—Market values suffered during the recent depression (257–259), but capitalists have too much at stake to permit the over-capitalized system to disintegrate, 259–260.

PHILADELPHIA's attitude toward passenger transportation companies is so different from that assumed by Chicago as to the passenger railways of that city that a brief history of the Quaker City's experience is worthy of record as furnishing food for reflection to the student of municipal problems. The period of development in Philadelphia covers just half a century. It was in the year 1857 that the older of the street railway companies, the Frankford & Southwark, the West Philadelphia Passenger Railway, and the Philadelphia & Darby Railway, obtained their charters. In the following year, 1858,

[1] In the preparation of this article the author begs to acknowledge the helpfulness of the following sources of information: Philadelphia Securities, the Street Railway Supplement of the Commercial and Financial Chronicle, and an argument by Councilman Lewis before the Common Council of the City of Philadelphia. Professor F. W. Speirs's excellent monograph on The Street Railway System of Philadelphia (Johns Hopkins Studies, Series 15) covers much of the ground; but the sources have been independently examined for the present article, and the course of events has been followed to date.

the chartering of such companies became a fad, as no less than nine corporations were created to operate in Philadelphia, as follows: Citizens' Passenger, Philadelphia & Gray's Ferry, Central Passenger, Second & Third Streets, Fairmount Passenger, Girard College Passenger, Fairmount & Arch Street, Green & Coates Streets, and the Germantown Passenger Railway Company. In 1859 seven more charters were granted, the recipients being: the Philadelphia City Passenger; Richmond & Schuylkill; Ridge Avenue & Manayunk; Philadelphia & Olney; Hestonville, Mantua & Fairmount; Thirteenth & Fifteenth Streets; and Seventeenth & Nineteenth Streets. In the six following years half a dozen charters were obtained for the Lombard & South Streets, Frankford & Philadelphia, Frankford & Holmesburg, Union Passenger, Schuylkill River Passenger, and the Empire Line.

Thus by the end of 1859, with nineteen charters granted, the nucleus of the present extensive system was fairly established. The franchises were perpetual, subject, however, to the conditions of the following ordinance which was enacted in July, 1857:—

AN ORDINANCE TO REGULATE PASSENGER RAILWAY COMPANIES.

SECTION 1. The Select and Common Councils of the city of Philadelphia do ordain that all passenger railroad companies within the city of Philadelphia shall be subject to the restrictions, limitations, terms and conditions hereinafter provided; and that such company before entering upon any road, street, avenue or alley within the limits of the said city, shall be understood and deem to be subject thereto upon the conditions hereinafter prescribed.

SECTION 2. That it shall be the duty of said companies, or any of them, to conform to the surveys, regulations and gradients as they are now or may hereafter be established by law. They shall

submit all proposed plans, courses, styles of rails, and the manner of laying the same to the Board of Surveys and Regulations for their approval and sanction, which shall be obtained before they proceed to break ground or occupy any of the highways as aforesaid.

SECTION 3. That all railroad companies as aforesaid shall be at the entire cost and expense of maintaining, paving, repairing and repaving that may be necessary on any road, street, avenue or alley occupied by them. That for the convenience of the public it shall be the duties of the companies to clear the streets or other public highways that they may occupy of snow or any obstruction placed therein by such companies when the same impedes the travel upon such highways. . . .

SECTION 8. The directors of any such company or companies shall immediately, after the completion of any passenger railroad in the city, file in the office of the city solicitor a detailed statement under the seal of the company, and certified, under oath or affirmation by the president and secretary, of the entire cost of the same and the city of Philadelphia reserves the right at any time to purchase the same by paying the original cost of said road or roads and cars at a fair valuation. And any such company or companies refusing to consent to such purchase shall thereby forfeit all privileges, rights, and immunities they may have acquired in the use or possession of any of the highways aforesaid. . . .

SECTION 9. Any passenger railroad company which is now or may hereafter be incorporated in the city of Philadelphia shall by their proper officer or officers, who shall sign the same, file in the office of the city solicitor a written obligation to comply with the provisions of this ordinance: provided that no railroad company now incorporated shall be authorized to commence work upon any of the highways of the city until this section has been complied with; and a failure to do so for ten days shall be taken and deemed as a refusal on the part of such company.

It has been customary for the street railways of Philadelphia to pave the streets occupied by their tracks not merely between the rails, but from curb to curb, to maintain such pavements and to lay new pavements whenever necessary. Thus the city has obtained something like 500 miles of street paving at the expense of the street

railway companies, altho it has been observed that it often occurs that, shortly before a street was occupied for the first time with tracks, the street would be newly paved at the expense of the city. The paving obligation was strengthened by the ordinance of 1859, which provided, among other things:—

> That any city passenger railway company now incorporated, or that may be hereafter incorporated, shall, after notice has been given to said company by the Chief Commissioner of Highways, repave or repair from curbstone to curbstone any street over and along which the tracks or rails of said company may pass; the said paving and repairing shall be done according to the grade now established, or that may hereafter be established by law, and shall replace the grade of said street so far as the same may be altered by said company, and shall repave any street used by said company as aforesaid, within the time fixed by the Chief Commissioner of Highways in said notice.

In the charters of fifteen of the companies it is expressly provided that there shall be paid to the city annually a tax of 6 per cent. upon all dividends declared in excess of 6 per cent. Eleven companies complied with this requirement in 1906, paying into the city treasury the sum of $115,578. This is construed to mean 6 per cent. on the par value of the stock, regardless of the amount paid in. For over ten years the Philadelphia & Gray's Ferry Passenger Railway Company has refused to pay this dividend tax. In 1896 a suit was brought by the city against the company to compel it to pay the tax, but the suit is still pending. All of the companies affected are leased lines, whose shareholders receive their dividends free of tax, and the burden of the tax therefore falls upon the latest holding company, which is the Philadelphia Rapid Transit Company. The amount of dividend tax paid in 1906 was for the account of the following companies:—

West Philadelphia Passenger Railway	$6,300.00
Philadelphia City Passenger Railway	7,290.00
Union Passenger Railway Company	11,700.00
Continental Passenger Railway	3,600.00
Thirteenth & Fifteenth Streets Passenger Railway	10,800.00
Second & Third Streets Passenger Railway	12,491.00
Ridge Avenue Passenger Railway	10,800.00
Frankford & Southwark Passenger Railway	33,750.00
Citizens' Passenger Railway	8,400.00
Green & Coates Streets Passenger Railway	3,060.00
Germantown Passenger Railway	7,387.00
Total	$115,578.00

Horses and mules were used for power until about 1885, when an underground cable was substituted upon the Market Street line. A little later cables were installed for the Columbia Avenue and Seventh and Ninth Streets lines. The cables were never satisfactory, and in 1893 the companies sought the right to use electricity. The change in motive power which soon followed necessitated the entire abandonment of the cables, conduits, and power plants, which had been installed at great cost. In order that the companies might obtain the right to use electric power, they had to obtain rights which practically meant the granting of new franchises. In 1874 a change in the State constitution was made, so that thereafter a street railway could not enter upon any street without the consent of the city being first obtained. This made it necessary for the companies to deal directly with the city authorities.

On May 8, 1876, the Pennsylvania legislature passed the following act, which broadened the charters of the old horse-car lines:—

> Passenger railways in any and all cities of the first class in this Commonwealth may use other than animal power in the carriage of passengers in their cars whenever authorized so to do by councils of such city, and the limitations contained in any of the charters

of passenger railway companies restricting them to the use of horse power be and the same are hereby repealed; Provided further that the councils of such cities shall not exercise any of the powers conferred by this act except such railway company shall reduce their fares to five cents for a single ride on said railway.

In 1876 six-cent fares prevailed; but, when the companies began to avail themselves of the act of May 8, 1876, first by the use of the cable and later by applying electric power, a change in fares to five cents was inaugurated. With the use of electric power entirely five-cent fares became universal throughout the city.

In 1893 and 1894 ordinances were passed conferring upon the several companies the right to erect trolley poles and overhead wires. Among the restrictions imposed were the following:—

That the railway or trolley system herein authorized shall be so built and erected as not to interfere with the building, erecting and operating of any elevated railway or railroad on any of the streets or avenues herein named.

Before any permit shall be issued by the departments of the city to proceed with the work of constructing the railway or trolley system authorized by this ordinance the said railway company shall enter into an agreement with the mayor of the city (who is hereby authorized to execute the same on behalf of the city), which agreement shall be in form approved by the city solicitor, and shall, among other things, provide that the said railway company shall agree to keep and maintain in good order, at all times, whether paved, macadamized or unimproved, all streets, avenues or roads traversed by its line of railway or by its trolley system; that said railway company shall agree to accept as binding upon it the terms and conditions of all laws and ordinances now in force or which may hereafter be passed relative to the government, control or regulation of railways or railroads of any kind within the city of Philadelphia.

That in the construction and equipment of its road-bed, cars or its trolley system, all kinds and character of materials, supplies or

workmanship, plans, profiles, elevations, designs, etc., shall be subject in every way, at all times, to the approval and inspection of the Departments of Public Works and Public Safety.

That the said company shall take down and remove the overhead trolley system whenever directed to do so by ordinance of councils.

The rate of fare to be charged for a single continuous ride over the entire line shall not exceed five cents per passenger, excepting between midnight and five o'clock A.M., when it shall not exceed ten cents.

That the said railway company shall furnish and execute a bond in form approved by the city solicitor, and with security approved by the mayor, in the sum of $25,000, conditioned upon the faithful execution and carrying out of all the terms and conditions of this ordinance and agreement herein authorized, which bond is forfeited to the city, and the money shall be paid into the city treasury, if the said railway company shall default in its agreement.

During the years 1893 and 1894 the following companies complied with the conditions of the new ordinances and filed agreements and bonds:—

Frankford & Southwark; the same for its Lombard & South Street branch; Citizens' Lehigh Avenue; Citizens' North End; Citizens' East End; and Citizens' Clearfield & Cambria; Brown & Parrish; Electric Traction as lessee of the Citizens'; Electric Traction as lessee of Philadelphia City; the People's for Green & Coates; the same for Germantown; the same for Callowhill; Northern; Chelten Avenue; Girard Avenue; Centennial; Seventeenth & Nineteenth Streets; Union Traction & Philadelphia Traction; Ridge Avenue; Philadelphia City; Thirteenth & Fifteenth Streets; West Philadelphia; Moyamensing & Penrose Ferry; Hestonville, Mantua & Fairmount; Wissahickon Electric; Delaware & Schuylkill.

From 1894 to the beginning of 1907 there was no important legislation in councils affecting the street rail-

ways, and such permits for extensions as were granted were always specifically made subject to the restrictions in the ordinances heretofore passed. Thus it appears that, notwithstanding the popular outcry against members of city councils, the city legislators between the years 1857 and 1907 carefully guarded the rights of future generations. While franchises were granted which were seemingly perpetual, they were in fact circumscribed by restrictions which made it possible for the city to purchase the railways, if at any time such a step seemed to be expedient. Moreover, the city was receiving a considerable compensation for the privileges granted, including the paving of streets from curbstone to curbstone at a cost in 1906 of $437,207, removal of snow from the highways at a cost of $28,036, a revenue of $115,578 derived from a tax on dividends, and $121,050 derived from car licenses. If the snow removal clause was not enforced to the letter, it was the city's fault. A great club which the city held over the railways, also, was its right to compel them to put the trolley wires underground.

Such were the conditions when early in 1907 a complaint arose from a director of the holding company, the Philadelphia Rapid Transit Company, which is also the present operating company, that the attitude of the Philadelphia public towards the street railways was affecting their credit, and that the holding company was unable to obtain funds to go on with its extensive work of constructing an underground road on Market Street. There had been no public clamor, no outburst of indignation, no unusual complaints, no agitation in the newspapers regarding the street railway companies, and the public was therefore at a great loss to understand the meaning of the complaining director. It was well known that the syndicate of bankers who took an issue of $10,000,000 of 4 per

cent, bonds of the Market Street Elevated Railroad,—a subsidiary company of the Rapid Transit Company,—which were sold for the purpose of supplying funds to finance the subway road as well as the elevated road, had been unable to market the securities and were therefore not in a mood to purchase any additional bonds which it was proposed to issue to complete the work. This condition of affairs was attributed rather to the tight money market than to what was termed the attitude of the public towards the railway companies. As the agitation proceeded, it became apparent that the railroad magnates and the bankers considered the restrictions of the old ordinances, particularly the right which had been reserved by the city to purchase any line at its original cost, and to compel the abandonment of overhead wires, to be detrimental to the credit of the holding company. If the city should exercise its right to acquire the railways at their original cost, what would become of the many millions of capitalization which created an inverted pyramid, the apex (in this case the base) being the small amount of capital issued by the old companies to finance the original cost of the roads? If the city should exercise its right of purchase and thereby remove this narrow base, the whole superstructure would come tumbling down. Or, if councils should compel all wires to be put underground, the railway would be put to great expense.

A campaign of education was carried on, and at length councils passed a marvellous ordinance, which repealed the ordinances of 1857 and 1893–94, thereby nullifying by a single act many valuable rights which former members of city councils had vigilantly guarded and preserved for the people of Philadelphia. The new ordinance, which was signed by Mayor Reyburn on June 30, 1907, is in the form of an agreement between the city and the

Philadelphia Rapid Transit Company. The company agrees to call in the balance of unpaid capital, amounting in August, 1907, to $9,000,000, and to expend it upon improvements now under way, and in extensions, improved equipment, and power plants. Complying with this provision, the company has already called $4,500,000, which was made payable on September 9 of this year, and has notified shareholders that a like amount will be payable by them on September 7 of next year. It is agreed that there shall be no further issues of stock or increase in funded debt by the company or its subsidiary companies without the consent of the city, saving the substitution of new bonds for those now existing, nor shall any further leases, obligations, or guarantees, be assumed by the company without the city's assent, and the company agrees not to part with any of its leases, franchises, or stocks without the assent of the city. Whenever councils determine that new surface, elevated, or underground railways are necessary, the company is to have the privilege of constructing such lines before a franchise to construct and operate such lines can be given to another company. The city is to have three representatives upon the board, one of whom shall be the mayor. The city comptroller has the right to examine the company's books to verify a statement which must be filed with his office annually by the company.

Dividends upon Rapid Transit stock are made cumulative on the amount of capital paid in from January 1, 1907, at the rate of 6 per cent. per annum, and all dividends in excess of 6 per cent. are to be shared equally with the city. The right to build a subway on Broad Street is surrendered, and the time for the construction of an elevated road to Frankford in the north-east section of the city is extended for three years from June 1, 1907.

The eighth provision is particularly important. It stipulates:—

> that the city hereby confirms to the company and its subsidiary companies all of the consents, rights and franchises heretofore granted and exercised by them, and each of them, including the right of operation of the overhead trolley system, free of all terms, conditions and regulations not herein provided for, and does further give up, surrender and agree not to exercise any rights which it may possess in respect to a repeal or resumption of any of the said rights now possessed or heretofore granted, or a taking over of any of said properties, any law, ordinance or contract to the contrary notwithstanding. Provided, however, that the present rates of fare may be changed from time to time, but only with the consent of both parties thereto. And provided further that nothing in this contract contained shall be construed to limit the power of the city to make all rules and regulations relating to the operation and management of the lines controlled by the company necessary and proper to preserve the public health and the safety of its citizens.

The company undertakes to provide a sinking fund by making monthly payments ranging from $10,000, beginning with July, 1912, to $30,000, beginning with July, 1942, and continuing until July, 1957. These payments will amount to $12,000,000, and, with interest, the sum is to be available for the purpose of the city purchasing at par all of the $30,000,000 of capital stock of the Philadelphia Rapid Transit Company. Whenever the amount in the sinking fund reaches $5,000,000, it may be paid over to the city and become the property of the city, and further payments shall be made directly to the city treasurer. To persons who understand the requirements of a city for improvements it is apparent that by the year 1957 the city of Philadelphia will have a very small portion of the sinking fund available for the purchase of the stock of the Rapid Transit Company. The

temptation to expend the fund as it accumulates will be more than ordinary councilmen can resist.

The city reserves the right to purchase the company's outstanding stock on July 1, 1957, or on July 1 of any subsequent year, at its par value upon giving six months' notice of such intention. The company, however, may retain its franchise to be a corporation, and it may be a bidder for the right to operate the railway if the city undertakes to let such privilege after acquiring the property.

It is expressly provided that the city shall not in any way be liable for the debts and obligations of the company, and that the credit of the city shall not be pledged or loaned to the company. The profit-sharing feature is not to be construed as making the city a partner of the company, but any portion of the earnings which may be paid to the city is in lieu of additional taxes and obligations which might otherwise be put upon the company for the benefit of the city. Already a suit has been commenced to test this clause of the agreement. A passenger having sustained an injury has brought suit against the company to recover damages, and the city has been made codefendant, the allegation being that the city is a partner in the operation of the railways and is therefore liable for damages. The real purpose of this suit is said to be to disrupt the agreement on the ground that it is unlawful for the city to enter into such a partnership as is alleged by the plaintiff to exist.

In lieu of all obligations on the part of the company and its subsidiary companies for the paving, repaving, and repair of the streets occupied by its surface lines, the obligation of the company with respect to the removal of snow therefrom, and all license fees with respect to cars run upon the streets or over bridges, it is provided that the following yearly payments shall be made: for

paving and repaving streets, $390,000; for the removal of snow, $15,000; and, in lieu of car licenses, $95,000,—making a total of $500,000 which the company is to pay annually to the city for the first ten years of the contract. The claim is made that the actual expense which the company has heretofore borne on account of the items named is about $400,000. But, as was stated above, in the company's annual report for 1906 the total cost of these items was given as $586,000. Provision is made for an increased payment at the expiration of each period of ten years.

The city is not to impose any other taxes or license fees, but the companies are not relieved from taxation upon real estate or from the payment of the tax upon dividends.

All contracts, agreements, and bonds existing between the city and the company and its subsidiary companies are superseded and cancelled, excepting an agreement to contribute $400,000 for the abolition of grade crossings, work upon which is now in progress, and some minor agreements as to the laying of tracks. The ordinance of July 7, 1857, together with all supplements thereto, and all other ordinances and parts of ordinances, and all contracts inconsistent with the new ordinance, are repealed.

The city has thus absolutely surrendered its right, long cherished, to purchase at their original cost the street railways. It has handed over to the street railway magnates the last weapon which it could use to compel them to be good, namely, the right to require the companies to put their wires underground.

By far the strongest motive back of the ordinance of 1907 is a purpose on the part of the capitalists owning the securities of the underlying companies to remove forever the possibility of the city exercising the right it once held of acquiring the properties at their actual cost.

Many of the underlying securities are stocks which are only partially paid. Dividends have been guaranteed upon millions of unpaid capital. If the city had exercised its right to acquire the street railway properties, there would have been absolutely no value back of many of the guaranteed stocks which now have a high market value because of the enormous dividends paid by the leasing companies. An investigation of this phase of the street railway problem of Philadelphia is interesting to the student of high finance. After making millions of dollars through their manipulation of the passenger railway stocks of Philadelphia, the Philadelphia financiers applied the same methods to the traction stocks of New York, Baltimore, Pittsburg, and Chicago.

An analysis of the street railway system of Philadelphia will take us back to the underlying companies which obtained the original franchises. The Frankford & Southwark, known as the Fifth & Sixth Streets line, possesses a franchise on the streets named, and its lines run north and south through the busy commercial section of the city. In 1888 it issued $250,000 of additional stock at par to cover earnings which were put into construction and equipment, and after this stock was issued a dividend of $11 per share was paid in cash, thereby returning to shareholders the cost of the new stock less the State tax on the dividend. In 1890 another issue of stock was made to provide for equipment and extensions and to pay off maturing bonds. The total capital is $1,875,000, par $50, full paid. This company is leased at an annual rental of $18 per share, or 36 per cent. On a 4 per cent. basis its stock is worth $450 per share. It has sold as high as $470. The original cost of the property is probably represented by the amount of the full-paid stock, namely, $1,875,000. If the city were to acquire it on a 4 per cent. basis under the guarantee of a dividend of 36 per cent., it would

have to pay the large sum of $16,875,000. The city has relinquished its privilege of buying the property for $1,875,000.

The Citizens' Passenger Railway has a line ten and one-half miles long on Tenth and Eleventh Streets, also running north and south. The authorized capital is $500,000, but only $20 per share was paid in on 8,500 shares and but $16 per share on 1,500 shares, making a total paid in capital of $192,500. Upon this small amount of capital there are guaranteed dividends amounting to the sum of $140,000, being $14 per share, or 70 per cent., upon a portion of the stock, and 87½ per cent. on the balance, on which only $16 per share is paid in. This stock has sold at a price as high as $375 per share. On a 4 per cent. basis it is worth $350, at which price the issue would cost the city $3,500,000 instead of $192,500, the cost of the stock to original shareholders. This case affords an extreme example of the inflated capitalization of the underlying companies upon which the Philadelphia Rapid Transit Company is paying guaranteed dividends. These guarantees swell the fixed charges to a sum which makes a heavy burden for the holding company, and it is this feature more than anything else which has hurt the credit of the company. The new ordinance does not lighten the burden of the Philadelphia Rapid Transit Company one whit, so far as these guarantees are concerned. There has been no scaling down of fixed charges, except at the expense of the city.

The Citizens' Passenger Railway was leased to the Frankford & Southwark for 999 years. The lease was assigned to the Electric Traction Company, and then reassigned to the Union Traction Company, and finally assigned to the Philadelphia Rapid Transit Company. Thus out of this single strip of railway there are no less than five different corporations absorbing earnings. If, instead of being

required to earn something for each of five hungry corporations, the property had simply to earn, say, 10 per cent. upon the original investment of $192,500, the fares might be much less than five cents, and still the revenue would be ample. The $192,500, however, represents nothing more than the franchise, and it is this franchise which the leasing companies regard as worth $3,500,000 to them,—at least, they are willing to pay 4 per cent. interest on that amount of capital for the privilege of using the franchise of this company. The Electric Traction Company expended a large amount of money in electrifying the line, and the Philadelphia Rapid Transit Company has also expended a large sum in relaying the tracks with entirely new rails. These additional expenditures figure in the total capitalization of the system, and to that extent the gross capitalization is not water. But, had the city exercised its right to purchase at the original cost, the expenditures necessitated by the change of power might have been entirely lost, unless the courts sustain the claim of some financiers that all such expenditures should be regarded as "original cost."

The table on the following page shows the original group of companies owning franchises on which is based the extensive capitalization of the holding companies subsequently organized:—

Name.	Capital.	Dividend per Cent.	Amount of Dividend.	Capital Paid in.	Dividend on Paid in Capital.	Bonds.	Interest.	Total Charges.	Water in Stock.
Frankford & Southwark	$1,875,000	36	$675,000	$1,875,000	36	$150,000	$14,497	$689,497	—
Philadelphia & Darby	200,000	4	8,000	200,000	4	100,000	4,000	12,000	—
West Philadelphia	750,000	20	150,000	750,000	20	996,000	52,260	202,260	—
Citizens' Passenger Railway	500,000	28	140,000	192,500	70 to 87½	—	—	140,000	$307,500
Philadelphia & Gray's Ferry	617,500	8	49,400	308,750	16	—	—	49,400	308,750
Second & Third Streets	1,060,200	24	254,448	771,076	30	—	—	254,448	289,124
Green & Coates Streets	500,000	12	60,000	150,000	40	—	—	60,000	350,000
Germantown Passenger Railway	1,500,000	10½	157,500	650,000	15 to 35	—	—	157,500	850,000
Philadelphia City Passenger Railway	1,000,000	15	150,000	475,000	31½	200,000	10,000	160,000	525,000
Ridge Avenue Passenger Railway	750,000	24	180,000	420,000	42 9/10	—	—	180,000	330,000
Hestonville, common	1,966,100	4	78,644	1,966,100	4	1,250,000	59,500	170,178	—
Hestonville, preferred	533,900	6	32,034	533,900	6	—	—		
Thirteenth & Fifteenth Streets	1,000,000	24	240,000	334,529	71½	500,000	23,500	263,500	665,471
Seventeenth & Nineteenth Streets	Merged [1]	3	—	—	6	100,000	5,000	5,000	—
Lombard & South Streets	Merged [2]	16	—	—	26½	282,100	10,534	10,534	—
Union Passenger Railway	1,500,000	19	285,000	925,000	31½	750,000	37,500	322,500	575,000
Empire Passenger Railway	600,000	—	—	600,000	—	200,000	7,000	7,000	—
Catharine & Bainbridge Streets	400,000	6	24,000	400,000	6	150,000	7,500	31,500	—
People's Passenger, common	1,500,000	10	150,000	740,965	20	—	—	242,810	1,334,035
People's Passenger, preferred	575,000	10	57,500		20	750,000	35,310		
Continental Passenger	1,000,000	12	120,000	1,000,000	12	280,000	16,800	136,800	—
West End (merged)	—	—	—	—	—	132,100	4,623	4,623	—
Total	$17,827,700	—	$2,811,526	$12,292,820	—	$5,840,200	$288,024	$3,099,550	$5,534,880

[1] Stock owned by Union Passenger Railway.

[2] Stock owned by Frankford & Southwark.

Omitting the stocks of the Seventeenth & Nineteenth Streets line and the Lombard & South Streets line, which, as shown by the foot-notes, are owned by other companies mentioned in the table, it appears that the total par value of the capital stock of these underlying companies is $17,827,700; but, as there was actually paid in only $12,292,820, the stocks represent water to the amount of $5,534,880. The handsome dividend returns received by some of them, tho only partially paid in, gave these issues a high market value, and this fact first opened the eyes of the Philadelphian financiers to the easy road to wealth afforded by issuing partially paid certificates, and then having the dividends guaranteed by some leasing company.

A new and distinctive period in the history of the street railways of Philadelphia began in the early eighties, when a coterie of capitalists, of whom Peter A. B. Widener, the late William L. Elkins, and Thomas Dolan were at the head, began their manipulation of the Philadelphia street railway stocks. The Philadelphia Traction Company was formed in 1883 by the issue of partially paid shares. Up to the day when the Union Traction Company was organized to take over this company among others, its shares were subject to the greatest market manipulation. Colossal fortunes, out of which palaces have been built, were accumulated, not through the earnings of the street railways, but by using the stocks of such companies as a means to obtain the capital of the small investor and speculator. Philadelphia Traction shares would be bulled in the stock market until the market price was much above the amount paid in on each share. At the high prices the stock would be unloaded upon the confiding public, and then a call of five dollars per share would suddenly and unexpectedly be announced by the management. Down would drop the market value to a level

probably below the actual amount of cash paid in. Speculators who had over-traded by buying more shares than they could afford to pay an assessment upon were under necessity of selling as soon as the call was announced. It was during such periods of depression that the insiders were afforded an opportunity to get back their original holdings at a price less than they had at first cost. This operation was repeated as each subsequent call was made and the process continued until at length the stock became full paid, with a regular dividend of $4 per year guaranteed by the Union Traction Company.

Companies acquired by lease or purchase and forming the Philadelphia Traction system were: Catharine & Bainbridge, Continental Passenger Railway, Empire Passenger Railway, Philadelphia City, Philadelphia & Darby, Philadelphia & Gray's Ferry, Ridge Avenue, Schuylkill River, Seventeenth & Nineteenth Streets, Thirteenth & Fifteenth Streets, Union Passenger, West Philadelphia, Hestonville, Mantua & Fairmount, Fairmount Park & Haddington, and some connecting lines, the whole forming about 186 miles. The capital of $20,000,000 is full paid, and was expended in reconstruction, in new equipment, in building power-houses and cable lines. All that the present holding and operating company has to show for the $20,000,000 expended by the Philadelphia Traction Company is probably some buildings; for the equipment, cable roads, and machinery disappeared long ago, giving way to new equipment, new construction, and new power plants when electric power superseded the cable and horse cars. Yet there remains as a relic the annual charge of $1,600,000 which the Philadelphia Rapid Transit Company must pay to the holders of the stock of the old Philadelphia Traction Company. This $20,000,000 cannot be regarded exactly as water; yet the present operating company is deriving little, if any, benefit

from the expenditures made. The charge of $1,600,000 per annum must be regarded as a bonus paid to the holders of Philadelphia Traction stock for the use of the franchises of the underlying companies, and the principal may therefore be properly added to the capitalization. There should also be added $564,000 of Philadelphia Traction 4s.

The success of the Philadelphia capitalists attracted the attention of other financiers, and in 1893 the People's Traction Company was formed by local capitalists, who proceeded to lease the Germantown Passenger Railway, including the Fourth & Eighth Streets and the Girard Avenue Railway Companies and the Green & Coates Streets Railway. The new company acquired ownership of the People's Passenger Railway, the Philadelphia, Cheltenham & Jenkentown Passenger Railway, and other lines, which with the leases gave it a system of 117 miles. People's Passenger Railway shares were acquired by paying $5 in cash and $70 in a collateral trust certificate bearing 4 per cent. interest, the total amount of the issue being $5,807,000. The People's Traction Company was organized with 200,000 shares of the par value of $50, on which there was paid in $30 per share, or $6,000,000 in cash.

About the same time another group of men organized the Electric Traction Company, with paid in capital amounting to $8,297,920. The principal railways, acquired chiefly by lease, were the Clearfield & Cambria, Citizens' East End, Citizens' Passenger Railway, Frankford & Southwark, Lehigh Avenue, Second & Third Streets, and Lombard & South Streets, the mileage being 129 miles.

For about two years Philadelphia enjoyed actual competition among her street railways. There were three rival systems, the Philadelphia Traction with 210 miles, the People's Traction with 117 miles, and the Electric

Traction with 129 miles of railway. These lines occupied parallel streets in many portions of the city. The result of the rivalry was that there was strife among the managers to supply comfortable equipment and plenty of it. There was extraordinary effort made also to move the cars speedily and regularly. But the greatest benefit derived by the public was the liberal treatment afforded it in the way of transfers. By the payment of a single fare a passenger could go from one section of the city to any other portion of it. The facilities thus afforded were never equalled before or since in Philadelphia. Electric power had superseded horse and cable power on all of the principal lines at this time. So liberal were the transfer privileges that abuses undoubtedly arose, and by trading transfer passes many passengers probably obtained two rides by the payment of a single fare.

Such were the conditions when the Union Traction Company was formed in 1895 for the purpose of consolidating the three other traction companies.

The Union Traction Company was organized by the Philadelphia Traction capitalists, with 600,000 shares of stock, having a par value of $30,000,000, or $50 per share, but with only $5 per share paid in at the organization. The first step was to acquire the Philadelphia Traction Company by a lease for 999 years, the consideration being a guarantee of its dividend of 8 per cent., amounting to $1,600,000 per annum. The next step was to purchase the stock of the People's Traction Company and that of the Electric Traction Company, the shares being paid for by collateral trust certificates bearing 4 per cent. People's Traction stock with $30 per share paid in was bought for $76 in certificates. For the full-paid shares of Electric Traction stock, par $50, there was paid $85 per share in certificates; and for the shares on which only $30 per share had been paid there were given certificates to the amount

of $76. For shares on which there had been paid in $15,097,920 there were given certificates bearing 4 per cent. interest to the amount of $29,730,114.

As this financiering was along the methods heretofore adopted, the effect was to add largely to the water in the capitalization, adding to the burden of the public by requiring it to pay an income upon capital which was never contributed to the public enterprise. There was injected $14,638,020 of water. As the old shares of the Electric and People's Traction Companies were placed in trust to secure the new issue of 4s, the total capitalization was simply increased to the extent of the water injected. There was, however, added to the charges the sum of $1,189,437, which, with the $1,622,560 caused by the guarantee of the dividend on Philadelphia Traction and the interest on its small issue of bonds, added $2,811,997 to the annual charges.

During the years immediately following, calls were made upon the owners of Union Traction stock until $17.50 per share had been paid in. The big system, weighted down with water, was showing a deficit. In October, 1898, the Union Traction leased the Hestonville system for 999 years, guaranteeing 4 per cent. on the common and 6 per cent. on the preferred shares. The Union Traction also bought 4,780 shares of Hestonville preferred at par and 35,294 shares of the common at $45 per share, paying therefor out of the proceeds of an instalment on Union Traction stock. From the water in Union Traction shares there should be deducted, to prevent duplication, $1,825,630, the sum paid for the Hestonville stock. Including the Union Traction stock at its par value, $30,000,000 and $1,500,000 of 4 per cent. bonds which were issued, the capitalization and charges of the system stood as follows at the time the Philadelphia Rapid Transit Company was formed: total stock, par value, $67,-

827,700; capital paid in, $42,792,820; bonds, $37,634,114; water in securities, $37,847,270; amount of dividends, $5,911,526; interest, $1,560,021; total charges, $7,471,-547.

With the curtailment of transfer privileges under Union Traction management and the construction of extensions, the net receipts of the combined companies at length began to improve, and for the year ended June 30, 1902, there was a surplus over all charges of $1,078,038; but, to offset this, there was a floating debt of a larger amount. Under its own management no dividend was ever paid upon Union Traction stock.

It was at this point that the Philadelphia Rapid Transit Company was formed. Some Philadelphians who were in close touch with the political leaders of the State of Pennsylvania and the city of Philadelphia obtained charters and franchises for surface railways on many streets not occupied by the Union Traction Company, and in addition for elevated roads and underground railways on streets already occupied on the surface. The management of the Union Traction Company agreed to absorb the franchise thus procured, and for this purpose the Philadelphia Rapid Transit Company was formed, with a capital of $30,000,000 authorized, divided into 600,000 shares of the par value of $50 each, $5 being paid in as the first instalment, which thus raised $3,000,000. The new company at once guaranteed dividends upon the $30,000,000 of Union Traction stock, beginning with 3 per cent. for the year commencing July 1, 1902, increasing to 4 per cent. in two years, to 5 per cent. in four years, to 6 per cent. in six years and thereafter. At once, therefore, $900,000 was added to the fixed charges, and beginning with July next, when the full 6 per cent. dividend will begin to accrue, the charge on Union Traction stock will be $1,800,000 per annum. In

addition $1,500,000 of Union Traction bonds bearing 4 per cent. were issued to fund the floating debt, adding $60,000 to the interest charges. As the full amount of Philadelphia Rapid Transit stock will be full paid by September 7, 1908, the final instalment of $7.50 per share being due at that time, the capitalization will be swelled to the extent of $30,000,000 thereby. There were issued also, in 1906, $10,000,000 of Market Street Elevated 4s, the annual interest on which amounts to $400,000.

By guaranteeing dividends on the $30,000,000 of Union Traction stock, on which only $17.50 per share had been paid, or $10,500,000 in cash, the amount of water in the underlying securities was nearly doubled. There remains unpaid on Union Traction stock $19,500,000. By guaranteeing dividends on this amount of unpaid capital, the water in the organization was increased, as explained above, from $20,172,900 to $37,847,270. Dividends of 6 per cent., or $3 per share, which will be paid next year according to the guarantee, are equal to over 17 per cent. on $17.50, the amount paid in on each share. This transaction far surpassed all previous efforts at stock watering in the street railway system of Philadelphia.

Either by purchase or lease the Philadelphia Rapid Transit Company has acquired control of the Doylestown & Willow Grove Railway, which has $500,000 of 4 per cent. bonds outstanding, on which the interest is $20,000; the Philadelphia and Willow Grove line, which has $1,000,000 of 4½s, the interest charge being $45,000; the Twenty-second Street and Allegheny Avenue line, with $651,000 of paid in capital, on which dividends of 6 per cent., or $39,000, are paid annually; and the Philadelphia, Morton & Swarthmore line, which is guaranteed a rental of $17,000 yearly.

Since the formation of the Philadelphia Traction Company in 1883, the purchase of the Hestonville stocks by

the Union Traction Company, the purchase of the stocks of the People's Passenger Railway by the People's Traction Company, and other similar purchases of underlying securities have materially helped to squeeze out the water which had accumulated in the stocks of the original companies. There is no doubt that a large amount of earnings was expended upon the properties. For the purpose of fairness, therefore, the original group may be taken as being free from water at this time. The following table will, however, show to what an extent more water was injected by the financiering of recent years.

By this table it may be seen that dividends and interest are being paid upon $34,783,194 of water. But it must also be observed that in twenty-four years there was actually paid into the treasuries of the companies named the large sum of $85,492,920, of which $15,097,970 is represented by the Electric and People's 4 per cent. bonds, and the balance by other bonds and stocks. This represents average investments of nearly $3,500,000 annually in the street railways of Philadelphia. The demands of the future for capital will be no less, and they should be more if the transportation system is to keep pace with the demands of the growing population. Hence the necessity of keeping good the credit of the parent company. In fifty years the actual cash investment amounts to $103,625,940.

The last annual statement of the Philadelphia Rapid Transit Company shows that the total of the fixed charges is now $7,488,958. For the year ended June 30 last the company failed to earn these charges by $364,048. Beginning with July next the fixed charges will be increased by $300,000, owing to the increase in the dividend on Union Traction. No doubt is expressed, however, of the ability of the company to more than earn its charges just as soon as it is able to complete the subway, which work ought to be finished early in 1909, and in the mean time

Name.	Capital Stock.	Dividend.	Amount of Dividend.	Paid in Capital.	Rate on Paid in Capital.	Water in Securities.	Bonds.	Interest.	Total Charge.
Philadelphia Traction	$20,000,000	8	$1,600,000	$20,000,000	8%	None	$564,000	$22,000	$1,622,560
Electric and People's Traction	—	—	—	—	7.8%	$14,632,194	29,730,114	1,189,204	1,189,204
Union Traction	30,000,000	5	1,500,000	10,500,000	14.28%	19,500,000	1,480,000	59,200	1,559,200
Philadelphia Rapid Transit	—	—	—	25,500,000	—	None	10,000,000	400,000	400,000
Doylestown & Willow Grove	—	—	—	—	—	None	500,000	20,000	20,000
Philadelphia & Willow Grove	—	—	—	—	—	None	1,000,000	45,000	45,000
Twenty-second St. & Allegheny Ave.	1,302,000	3	39,060	651,000	—	$651,000	—	—	39,060
Philadelphia & Darby	—	—	—	—	—	None	200,000	9,000	9,000
Philadelphia, Morton & Swarthmore	—	—	—	—	—	None	—	[1] 17,000	17,000
Total	$81,302,000	–	$3,139,060	$56,651,000	—	$34,783,194	$43,474,114	$1,761,964	$4,901,024

[1] Rental, which will be gradually increased.

the monthly earnings of the surface and elevated lines show substantial growth.

Philadelphia Rapid Transit stock has suffered severely on account of the financial depression, selling down to $12 per share with $42.50 per share paid in. Union Traction shares, which have sold as high as $64 per share, have recently found a market around $43. The decline in Union Traction was due largely to the possibility of a disintegration of the Rapid Transit system. There is entirely too much at stake to permit this to occur. The present owners of Rapid Transit stock, who have paid in $25,500,000 of capital, are not only desirous of obtaining an income on this investment, but they are large owners of the guaranteed underlying securities, and they have every motive, therefore, for holding the big system together.

There is no cause for complaint as to fares, as six tickets are sold for twenty-five cents. The fare upon the elevated road is five cents, but many of the surface lines give free transfers to the elevated road. Hereafter it is understood that it will be the policy of the management to curtail free transfers wherever possible.

The new relations of the city toward the Rapid Transit Company are already bearing fruit. The Director of Public Safety is making unusual efforts to keep teamsters from blocking the tracks, but a still greater service is being rendered the company by efforts to break up a system by which the Philadelphia Rapid Transit Company has been victimized to the extent of millions of dollars. According to the allegations of the officers of the company there has grown up in Philadelphia a wonderful system whereby policemen, hospital attendants, lawyers, runners for the lawyers, and physicians have united in a systematic effort to obtain excessive damages from the company for every accident whereby any person may have sus-

tained damages. Taking the clew from President Parsons of the company, the city officials have of late been exceedingly active in efforts to break up this combination. Settlement of claims for damages against the company last year called for the disbursement of $1,217,586, an increase over the preceding year of $326,266. Payments for damages last year were equal to a dividend of 4 per cent. upon the entire capital of $30,000,000 of the company. Ten years ago from 2½ to 3 per cent. of the gross earnings were sufficient to pay all claims for damages, but now nearly 7 per cent. is needed to meet these extraordinary demands.

Last year the Rapid Transit Company carried 492,137,038 passengers, an increase of 43,560,253 over the preceding year, and the passenger receipts were $18,095,503. By way of comparison it may be stated that the Pennsylvania Railroad last year carried 62,108,708 passengers, and the railroad's receipts from this source were $30,074,868.

FRANK D. MCLAIN.

THE COST AND THE PROFITS OF STEEL-MAKING IN THE UNITED STATES.

SUMMARY.

The causes of differences in cost, as to ore, 262–264; fuel, 264–267; limestone, 267; labor cost for iron and steel, 267–270.—The accumulated profits of the Steel Corporation, 270–272.—The results of its business for 1906, 272–273.

THE figure for the cost of steel throughout the United States or any particular country is little more definite than that for building a house or hiring a servant. The situation is too complex and has too many varying elements to permit the figures to be the same for producing a ton of steel in any two places or even in the same plant from day to day. Every plant shows a variation, and sometimes these variations are far from slight.

It may seem simple: that the cost of a ton of steel is the cost of the raw material plus the cost of labor plus the capital and maintenance charges on the plant. But the raw materials may be bought in an open market or they may be made by the user. If the user makes them himself, they represent cost of production for him. If he buys them, they have no fixed relation to the cost of production, may in rare instances be below it, but usually are as much above it as the most anxious purchaser is willing to pay. These raw materials may be manufactured, again, in isolated, antiquated mills, where costs are high, or in the most efficient, most modern, and best plants, where the cost is at the minimum.

The only way to understand the cost factors and their range of variation is to examine them one by one. The most natural place to begin is with the cost of iron, the most important of the materials.

If the iron is bought,—as is yet the case with many steel mills,—the problem is simple, because the market price must be paid. This, however, is often 50 per cent. above cost price, and at times for many months together 100 per cent. or even more. It is therefore evident that no plant can afford to buy its pig iron unless it is to be used in those forms of manufacture which greatly increase its value: otherwise, it would be impossible to sell in competition with steel-makers making their own iron, and therefore getting it at cost. For example, a steel rail is a comparatively crude product, and therefore would not sell at a price as much above the cost of pig iron as would a boiler plate or a piece of good shafting. While the manufacturer of cruder products cannot buy his pig iron, the manufacturer of finer products may, and in many instances does, buy it.

If the iron is not bought, but made, there are at least five cost factors which should be noted. There are the three raw materials, ore, fuel, and flux; fourth, labor; and, last, the cost of keeping up the plant.

Let us consider the ore costs. Ore price, like that of all other commodities, may be set by either of two influences. It may be decided by what it costs to get it to the market or it may be set by the value that the product has to the purchaser, or, in other words, what he can afford to pay for it. As a matter of common practise, both of these influences are usually at work in every market, and the ore market is no exception to the rule. The operator of the most inaccessible, the poorest, or the leanest mine, must sell at a price that pays back his costs. If his ore must be had, it serves to set the price, and the same price is demanded by the lucky prospector who finds a solid bank of ore comprising a whole hillside and costing almost nothing to mine, because it is merely shovelled up. The lucky mine-owner may get rich quickly, as many of them have done, by selling his cheap ore to smelters at the ruling market price of ore. There have been times in our pushing prosperity when the pressure for ore may be said to have

eliminated the marginal mine for the time being and when all were mines of profit.

Here, then, is a problem, and a very serious problem, before the smelter of iron. Shall he buy his ore in the open market and take the fluctuations as they come,—high prices with the low, glut or famine, as the case may be,—or shall he enlarge his capital and widen his enterprise by becoming his own ore producer, and thereby get it at cost? In practise blast furnaces are being supplied by both methods. It is a distinct enlargement of the enterprise and the capital, and also of the risk, to do your own mining.

It is unquestionably true that, provided the deposit be good, the cheapest possible way of buying ore is to buy the ore land. It is natural that the present trend should be towards the elimination of the independent iron miner, who sells his ore to any purchaser as a coal miner sells coal to the purchasing public. But it should not be overlooked that probably the greater *number* of smelting concerns in this country still go to the ore merchant for supplies. In quantity of output the rank is with the mining smelter's of which the towering Steel Corporation is the great and shining but by no means isolated example.

There are various compromise methods between these two extremes. It is often a difficult and expensive operation to ascertain even the approximate amount of iron in a given deposit. In bargaining for its sale, neither party knows just what is at stake, and a greater definiteness is attained by leasing the mine on the basis of its contents than selling it in lump, land and all. The bargain is usually sealed by a cash payment, but all further payments are made from time to time for the ore removed. This method plainly takes less of the furnaceman's capital, and it also gives him less risk; for he knows what he is getting, altho he commonly pays more for it than if he had bought the land outright. The owner of the mine is usually protected by contract provisions requiring the removal of stipulated amounts of ore within given periods,

and in the case of the greatest of all these deals—the Great Northern ore lease to the Steel Corporation last year—there is an annual rise in the scale of prices.

There are other means of so managing the ore supply that both price fluctuations are uncertainty of supply are largely eliminated through a semi-partnership arrangement between the smelter and the miner, whereby each shares the other's prosperity and hard times. Pig iron has been so wild in its price fluctuations that one month the smelter would gladly give a price for ore that a year later would start him down the slippery road to ruin. Therefore, long-term contracts at fixed prices are hard to make. The furnaceman sees possible low prices and is afraid to bargain for high-priced ore next year or the year after. The miner sees possible high iron prices and wants to share them by getting a high ore price. The pair naturally have difficulty in bargaining on a definite rate. Hence a sliding scale has been evolved in some sections, whereby high prices in iron cause the payment of high prices for ore and *vice versa*. The remarkable way in which this semi-partnership works out into a practical profit-sharing is shown in one of these schedules, where an advance of 2½ or 5 cents per ton of ore is made for every 25 cents advance in iron price. Therefore, $10.50 iron is made from $1.15 ore, and $23 iron is made from the same ore at a cost of $2.95 per ton.

Taking all of these conditions together, there is, in the country at large, easily a difference of more than 100 per cent. in the ore cost of a ton of iron at different furnaces, the base price being that of the mining smelters.

The fuel costs respond to influences closely analogous to those that decide the cost of ore. The smelter may buy coke in the open market or he may make it for himself by either one of two processes. Here, also, as was the case in ore supply, there is no uniformity of practise; but the independent production of coke is more frequent than the independent mining of ore. Yet it is also true that the percentage of gain to be made by the private supply of coke

is sometimes extraordinary. The price of coke is strictly competitive, and often, in times of scarcity, such as we have recently passed through, there is keen strife among blast-furnace men to get the fuel necessary to keep their furnaces busily pouring forth their golden stream. That stream is indeed golden when the cost of iron is $10 to $14 per ton and the price $18, $20, or $22 per ton, with a clamorous demand from the purchaser. If the coke is all that is needed to keep the plant running, the operators can well afford to bid up for the fuel, and they do so with a profound influence on prices. There have been times in the past decade when the Connellsville coke-maker exacted $8 per ton from the feverish iron smelters, who, under reversed market conditions, had induced him to part with it for $1 a ton. Last year an iron-master told me that the Steel Corporation was making coke at a cost of $1 a ton, refusing to sell it at $4 per ton, and buying more at the same price. It takes from a ton to 1½ ton of coke to make a ton of iron, and, with the single difference in cost arising from purchased or privately made coke, there arose at that moment a difference of $4 per ton in pig-iron cost. That difference alone is sufficient to provide for a profit which, if steadily maintained, would soon make smiling millionaires of all the iron-makers in the country.

In the early part of 1906 Connellsville coke (the standard) was quoted at $3 to $3.75 per ton. It may be made in the old-fashioned wasteful but cheaply built beehive oven at a total cost ranging from a little over $2 a ton down to the neighborhood of $1, depending on local conditions and the price of purchased or privately mined coal. On the other hand, there are iron-makers who are using the new by-product coke oven, which makes much cheaper coke than the old oven, altho the oven itself is more costly to build. In one of these coke plants with which it has been my privilege to become acquainted, the costs are about as follows:—

A ton of coke requires 1.6 tons of coal, costing at 60 cents		$0.96
Labor and supplies, repairs and depreciation		.30
Cost of operating the plant per ton of coke		$1.26
The plant produced from each ton of coal:—		
Tar, gallons	8.07	
Ammonia, pounds	4.18	
Surplus gas, cubic feet	1,040	
Receipts from the coal making each ton of coke:—		
Tar, 12.91 gallons sold at 2.27 cents		29.3
Ammonia, 6.69 pounds sold at 10 cents		64.8
		94.1
Gas (not yet accounted for), 1,664 cubic feet		

Without counting the gas, the first two by-products, tar and ammonia, are worth—that is, they actually sell for—94.1 cents per ton of coke, leaving the coke cost 31.9 cents per ton. The makers still have on hand one and two-thirds thousand cubic feet of gas. Just what that gas is worth it is hard to say. This particular company passes it on as a power fuel to a subsidiary industry, and charges it on the books at a ridiculously low rate. Many subsidiary industries might use it, such as a rolling mill, a glass plant, a municipal gas plant, municipal electric light or street railway, a central electric power plant, a sand quarry and mill, or a cement mill. Certainly the owners of this particular bank of coke ovens would not sell the gas to an outside user for 10 cents or 15 cents. It is probably worth 20 cents per thousand. If they sold it at the last-named rate, it could be used in a gas engine at a fuel cost of less than ½ cent per hour per horse power, and it would come to a little over 32 cents per ton of coke made. That would leave the cost of the coke exactly nothing, or possibly a mill per ton less than nothing. It could really be heaved into the blast furnace with no charge whatever for furnace fuel. Granting, however, for purposes of discussion, that it really did cost 25 cents a ton, and taking that as a base, we have a variation of much more than 1,000 per cent. in the cost of fuel to various iron-makers in the United States.

The limestone flux, which by its alkaline qualities hastens the melting process, is acquired by simpler methods; but there is yet a varying range of prices, causing some iron-makers to pay twice as much for it as others do. Not all limestone suffices, and thousands of tons of it are carried at least 200 miles, including the high climb over the Alleghanies. Deposits in the Shenandoah Valley near the Potomac River are rapidly rising in importance as a source of flux for the Pittsburg district. Some of the smelters are so situated that they can use the waste chips from marble yards and marble quarries, others operate their own quarries, while still others buy from merchant quarries; hence the 100 per cent. variation in cost.

These surprising variations in raw material costs are met by similar variations in the labor cost of a ton of iron. This is due to the great opportunity for economies that arise from the organization of labor and the elimination of idleness in large scale production. Labor that is producing most efficiently must be continuously employed. At times this is impossible at a small blast furnace, where there is a great variety of work to be done, and where there must be on hand force enough to attend to it at the rush periods. I have examined the cost sheet of a comparatively small blast furnace in which the labor charges were subdivided into fifty-two classes. This variety of work and of workers explains the impossibility of constant employment and the consequent high labor cost of the iron, which at this furnace was for a recent year $1.17 per ton. At the same time at the Pittsburg furnaces, with four times the output, the cost was about one-fourth as much. It takes just as many pieces of harness for a pony as for a heavy draft horse five times as large, and it takes just as much attention to drive him. It makes little or no difference in the wages paid the engineer of the furnace engines whether they be for a furnace of 200 tons per day or one of 600 tons per day. The man who dumps cars into the furnace, the man who operates the scales to weigh the materials, indeed many of the workers, would be almost the same. They would

merely drive machines of greater force and greater burden. This is clearly shown by comparing the output of the same blast furnace, month by month for a year, with the labor cost per ton of output. If the furnace runs full, practically no more men are required than if the furnace runs but two-thirds of its maximum capacity. It is, therefore, plain why, in a particular case examined, the month of smallest production—namely, August, with 4,600 tons—had a labor cost per ton nearly 35 per cent. greater than the month of April, with an output (the maximum) 28 per cent. greater.

These are industrial facts whose profound significance has long been grasped by the great iron and steel makers. Furnaces in Pittsburg, with the 600 ton capacity as described above, have a labor cost at the furnace of 40 cents per ton, repairs at 12 cents, interest and depreciation 48 cents, leaving a total furnace cost of but $1 per ton in comparison with $2.10, as shown by the cost sheet of the smaller plant above mentioned.

The very cheap cost of blast-furnace labor just cited was partly due to the fact that the economical Pittsburg furnace did not make its pig iron into pigs, while the other furnaces, with labor costs above $1 per ton, made the pig iron into pigs for transportation to other works. A very considerable proportion of the fifty-two classes of labor cited above were employed in making moulds for the pig iron, running it into the moulds, breaking it up, piling it, handling it, and finally loading it into cars.

The disposition of the slag is also a cost factor. This waste of the furnace—a ton of it for every ton of iron, and usually more than a ton for a ton—has not only been a wasted by-product, but one which could be got rid of only at considerable cost. In the neighborhood of blast furnaces it has covered valuable land with unsightly and useless mountains, built up day by day through the steady work of highly paid laborers. These unappreciated monuments of industry are likely to be less numerous in the future, and they may even become of value. The material com-

prising them differs but little in its chemical composition from that required for cement. The enormously increasing demand for this dusty commodity is suggesting to iron-makers the ease with which their slag may be turned, as raw material already prepared, into the receiving door of a cement mill,—an item of cost turned into an item of profit, and conducing thereby to the final reduction of iron costs. This process is in its infancy, but it has already been begun by the iron-makers.

Considerable use has been made of slag from favorably located plants by selling it as broken stone for use in roofing and latterly as ballast for railways. The conversion of the molten stream of lava into these bits has already been accomplished for the remarkable low cost of 2 cents per ton by running the molten lava stream into a tank of water which quickly cooled it and broke it into small pieces, to be lifted thence into freight cars by endless chain conveyers.

It should not be understood that any one iron-maker is in a position to undergo all disadvantages in each of the cost factors. Most of the makers have a particular advantage in one or more factors, and are therefore able and willing to stand a disadvantage in some others. This is particularly the case with the plants that are near to good markets, which is in itself an advantage. The great makers of the Pittsburg district, of which the Steel Trust is a type, more nearly combine all the advantages than do the makers of any other districts with the exception of Birmingham, and possibly of Buffalo.

The actual cost and the book cost, as shown by the Steel Trust's books, would be very different. This great company performs its well-known combination of industrial and transportation services by means of a series of subsidiary corporations. Each of these keeps its own books and is apparently independent of all others. Therefore, the ore mining company, the lake carrying company, the railways in the ore region and from the lakes to the Pittsburg blast furnaces, and those from the various mines

and coke plants, appear upon their books to be doing business in the ordinary way, and usually each one of them does business at a profit. Consequently, the costs upon the books are quite like the costs for any independent enterprise, and therefore appear to be much higher than they really are, because one company is paying high prices which make profits for another company. Finally, at the end of the year, the profits from all are handed up to the great central throne, where sit financial magnates who make up the balance sheets of the United States Steel Corporation.

Here we see the results of integration. In the old-fashioned, independent way the ore miner sold his ore and made a profit; the little railway to the upper lakes carried the ore and made a profit; the steamer on the Great Lakes carried the ore and made a profit; the railway to Pittsburg carried the ore and made a profit; the blast furnace made pig iron and sold it at a profit; the steel-maker bought iron, converted it into steel, and sold billets or blooms and beams at a profit, and these the steel mills made up into finished goods. In the same way the coal miner mined and sold at a profit to the coke-burner, who made coke and sold it at a profit to the iron-maker, to whom it was carried on a railway which also made a profit. So it was with the limestone for flux.

For the Trust all this has changed. A dollar's worth of ore passing through these various stages with a profit in each case might easily double the original dollar, and double it again merely through profits on profits. All the numerous profits go to the same pocket, or rather to the same finance committee. The original dollar's worth of ore may therefore be considered to give many profits, or it may be better to think of it as riding through its many stages accumulating surplus value to make one grand profit at the final selling to the consuming public. During the process, however, the Steel Trust's actual costs are often different from the figures on the books, which are at the various stages both cost and profit.

An Ohio Valley ore-purchasing furnace near Pittsburg secures Lake Superior ores at prices about $4 per ton. This, the normal price for a small smelter who does not own transportation facilities, is made up of a profit for the ore merchant; freight rate to the Upper Lake ports of 80 cents per ton, of which at least 50 cents is profit; a lake rate of 80 cents, also yielding a large profit; railway freight rate, again profitable, of $1.14 from the Lower Lake port to Pittsburg. The Steel Trust, with its 200 steamers and its many railways and mines, can pocket all these profits and get its ore to Pittsburg for not far from $2 per ton, or about $3 for a ton of iron. The necessary coke and limestone for a ton of iron certainly cost less than $4. Thus $7 is an adequate figure for the material cost, while the labor and maintenance charges at the furnace add but another dollar. In the mean time, with this astonishingly low cost, the prevailing price of iron for many months in 1906 and 1907 was above $20 per ton, and sometimes more. That price had to be paid by the steel-maker depending upon outside sources for his iron.

The making of iron into steel is also a process with variable costs. One of the factors affecting the variation is the condition in which the pig iron is received at the steel mill. If it is received in cold pigs, they must be melted. If it is brought a splashing liquid straight from the blast furnace to the converter, there is a saving of $1.50, which would have been spent in making pigs and again melting them.

Less than three years ago, the cost of conversion from pig iron to steel in Pittsburg was from $3 to $3.50. Increased labor costs have now brought it up to a point where $4 is probably an outside figure. In some parts of the country the cost rises to $7 per ton for plants of less efficient construction, equipment, and operation. That brings the cost of the Pittsburg ingot up to about $12.

The rolling of rails from ingots costs $2 to $6 per ton in modern and antiquated mills, respectively. The plant of a modern rail mill costs about a million and a half of dollars. It will daily convert a thousand tons of ingots into steel

rails, which, therefore, have a total cost at Pittsburg of about $14 or possibly $15. It is thus seen why the Steel Trust could sell for $16 a ton if it had to, as for a long time the rail-makers did, and also why it can easily afford to maintain a steady price at $28 per ton on steel rails and resist the temptation to demand—what during certain periods might have been easily got—a much higher price. It is plain that, if it could maintain conditions, cost remaining the same and the demand for rails clamorous at $28 per ton and sometimes more for prompt delivery, its future is more assured than that of autocrats who command what they will from a diligent and servile populace. Of course no one expected such demand to be permanent.

An examination of the year's business, as shown by the report of 1906, is certainly reassuring to the stockholders, and it should be of more than passing interest to the consumer and student. The Steel Corporation manufactured 13,511,149 tons of steel ingots, paid out a total of 147 million dollars in wages, and took 156 million dollars of net earnings. Every ton of this steel, therefore, contributed nearly $12 to net earnings. This figure is very close to the difference ($14) as calculated above between the cost and selling price of steel rails. The shrinkage of the metal in working makes the figures come even closer. The 156 million dollars of net earnings were distributed approximately as follows: dividends, 35.4 millions; sinking funds and replacements, 30.6; bonds, interest, and sinking funds, 27.7; new construction, 28.5; new plant at Gary, 21.5; surplus, 12.7,—and all of this from thirteen and a half million tons.

The company is apparently getting the future profits that were counted upon by the promoters when they so tremendously over-capitalized it at its formation. It is growing up to the capital. Just how much was that over-capitalization is a matter to which others have devoted considerable attention and with which this paper is not directly concerned.

In the depression in which we now (mid-December, 1907)

find ourselves, we shall apparently have the opportunity to witness some of the effects of combination. One of the first moves was the strengthening of the Trust's position by the absorption of the Tennessee Coal Iron & Railroad Company. This occurred on November 6, 1907, after the Trust had surprised Wall Street by showing that the third quarter of 1907 had been one of the best in its history. The first nine months of this year showed net earnings of 128.4 millions as compared with 114.8 in 1906 and 84.5 in 1905.

During the year 1906 the average number of employees was 202,457. The Bulletin of the American Iron and Steel Association for December 1, 1907, reported that the Trust had recently laid off 20,000 men, and was then operating from 70–75 per cent. of its maximum capacity. By December 12 less than 50 per cent. of the corporation's furnaces were in operation. Just four years ago there was a similar depression, and only 20 per cent. of the furnace capacity was active. During the present decline in production the price of pig iron dropped a little, but not in proportion to the output. The Steel Corporation has the 51 furnaces out and 6 banked (December 12), as a part of its general policy of maintaining prices. The pig iron price and the steel price should not be confused. There is a much more open market for pig iron than for steel. There has been no reduction in steel prices. This is by far the most unusual part of the whole situation. Just as the Trust had declined to let prices soar, so now, when competition might and normally would send them to the very ground, they are held at the same highly profitable price.

If these conditions continue, the Trust will of course lose something. There is less business done, and what is done costs somewhat more because of the idle capital represented by partially unemployed plant. But, when one considers the exceedingly profitable basis of operations ascribed above and the big bargain it got in Tennessee, the Trust, while a loser, can scarcely be called a sufferer.

J. Russell Smith.

THE QUANTITY THEORY AS TESTED BY KEMMERER.

THE ever-fluctuating production of the precious metals makes the discussion of price theory of ever-present practical interest and importance. The classical quantity theory of prices is now being considered in both scientific and popular publications. Almost invariably, this discussion of price theory revolves, first of all, about the question, what *is* the quantity theory and what are "the other things" that are supposed to "remain equal"? But whatever the conclusion may be as to the connection or lack of connection between the quantity of money and prices, or as to what is to be included in "the other things being equal," the next question that arises is, does the theory explain the facts?

Dr. E. W. Kemmerer, in his Money and Credit Instruments in their Relation to General Prices,[1] attempts, first, to find a mathematical statement of the quantity theory modified to suit present conditions, and, second, to test that statement by the available statistics. It is the purpose of this article to make a constructive analysis of the theory and statistics presented in this monograph. The analysis, therefore, divides itself into two parts, corresponding to Dr. Kemmerer's division.

I.

Has Dr. Kemmerer succeeded in his attempt to state the theory clearly and completely? In a review of the book Professor Laughlin says,[2] "We have here a defence of the quantity theory of money from the metaphysical school

[1] Published in 1907 by Henry Holt & Co. as Volume I. of the Cornell Studies in History and Political Science.

[2] Journal of Political Economy, November, 1907.

of economics, . . . a clear and admirable statement of the quantity theory." It is not quite certain what Professor Laughlin means by "metaphysical." If he means that the reasoning of the book is general, the epithet will be accepted readily. If he means that the conclusions have no scientific validity, the obvious reply is that the test is in facts which we shall consider later. As to the "clearness" of the statement, it is interesting to note the view of Mr. R. R. Hess, of the University of Wisconsin,[1] "Mr. E. W. Kemmerer has developed a formula which fairly illustrates the present intangible contentions of the supporters of the quantitative theory."

Dr. Kemmerer develops a price equation for a hypothetical society which is completely isolated and possesses wealth and an exchange system. There is no barter or credit; the money consists of ten thousand coins all alike; and the coins are issued solely on government account. Under the conditions, according to Kemmerer, "If we represent the quantity of money in circulation by M, the number of times it is turned over by R, the number of commodities exchanged by N, the number of times they are exchanged by E, and their price by P, it is evident that

$$MR = NEP; \text{ or (2) } P = \frac{MR}{NE}$$ [2]

In deriving this equation, the further assumptions were made that the prices of all commodities were the same and that all were exchanged the same number of times. It may be remarked, in passing, that further explanation in regard to these assumptions is to be desired for the sake of clearness. But, even granting the assumptions, the equation cannot be correct if N represents the *number of commodities*. Does the *amount*, or number of units of each commodity changing hands, make no difference? If N should stand for the *number of units of commodity*, all units

[1] The Standard of Value and Prices, Journal of Political Economy, July, 1907, p. 399.

[2] Money and Prices, p. 13.

having the same average price and rate of turnover, the equation would be true.

Dr. Kemmerer later assumes that there are ten denominations of money and ten kinds of commodities in his hypothetical society, and "that each denomination of money and each variety of commodities has a rapidity of turnover peculiar to itself."[1] He uses the following symbols:—

$M_1, M_2, \ldots M_{10}$, to designate "the different denominations of money."

$R_1, R_2, \ldots R_{10}$, to designate "their respective rapidities of circulation."

$N_1, N_2, \ldots N_{10}$, to designate "the number of commodities of each variety to be exchanged."

$E_1, E_2, \ldots E_{10}$, to designate "their respective number of exchanges."

And combines them in the following price formula:—

$$P = \frac{M_1R_1 + M_2R_2 + \ldots + M_{10}R_{10}}{N_1E_1 + N_2E_2 + \ldots + N_{10}E_{10}}$$

This formula is supposed to be a mathematical statement connecting terms capable of exact quantitative expression. But the expression "the different denominations of money" is vague and has no quantitative meaning. Evidently, it is intended that M_1 should designate the amount, measured in terms of the money unit, of the coins of the first denomination in circulation; M_2, the amount of the coins of the second denomination, etc. For instance, if the first class consisted of 10,000 dimes and the unit were one dollar, M_1 would equal $1,000. Again, no definite meaning is given to "rapidity of circulation" until a statistical test of the equation is made on a later page. To be sure, he quotes Mill with approval in this connection as follows: "The phrase, rapidity of circulation, must not be understood to mean the number of purchases made by each piece of money in a given time. . . . The essential point is, not how often the money changes hands in a given time, but how

[1] Money and Prices, foot-note, p. 14.

often it changes hands in order to perform a given amount of traffic .... Some such expression as 'the efficiency of money,' though not unexceptionable, would do better; as it would point attention to the quantity of work done, without suggesting the idea of estimating it by time." That Mill does intend to bring in the time element is evident from the following, not quoted by Dr. Kemmerer: "We must compare the number of purchases made by the money in a given time, not with time itself, but with the goods sold in the same time."[1] The *exact* meaning attached to rapidity of circulation should have been given here by Dr. Kemmerer. Again, what can be meant by "the number of commodities of each variety"? If commodity is used to denote a class of goods, then "variety" is superfluous. It would seem that "commodity" is used in the sense of unit. We are told that P of the above equation stands for general prices, and that "the expression 'general prices,' as here used, represents a simple average of individual prices, and it is immaterial, so far as the demand for money is concerned, whether the individual prices, upon which the average is based, are all the same or all different."[2] It is impossible to agree or disagree with this statement until we are given more definite assurance of the meaning of "individual prices."[3]

Is it not possible to obtain a legitimate price equation between symbols having a definite mathematical meaning? Suppose that the following symbols stand for the concepts indicated:—

Let $M_1, M_2, \ldots M_{10}$, designate the average amounts, respectively, of the ten denominations in circulation, expressed in the money unit, during a unit of time.

[1] Mill, ii. p. 32. [2] Money and Prices, p. 14.

[3] Carver points out in The Distribution of Wealth (p. 4) that we should not pass to the explanation of the value of "things in general" before we explain the value of the unit of a particular commodity. Likewise the price equation should be built up from the price per unit of the commodity.

Let $R_1, R_2, \ldots R_{10}$, designate the average numbers of times, respectively, that coins of the first, second, third, etc., classes change hands during the unit of time.

$N_1, N_2, \ldots N_{10}$, designate the average numbers of units, respectively (bushels, yards, tons, etc.), of the first, second, third, etc., commodities in existence during the unit of time.

$E_1, E_2, \ldots E_{10}$, designate the average numbers of times, respectively, that units of the first, second, third, etc., commodities change hands during the unit of time.

$P_1, P_2, \ldots P_{10}$, designate the average prices, respectively, per unit of the first, second, third, etc., commodities during the unit of time.

Since it is assumed that all exchanges are made with the money, the following equation will be true:—

$$P_1N_1E_1 + P_2N_2E_2 + \ldots + P_{10}N_{10}E_{10} = M_1R_1 + M_2R_2 + \ldots + M_{10}R_{10}$$

On the left-hand side of the equation the products N_1E_1, N_2E_2, etc., represent what Irving Fisher calls the "flows" of the various commodities having prices, P_1, P_2, etc., per unit. These flows might well be represented by single symbols, $F_1, F_2, \ldots F_{10}$. As the various "flows" are here multiplied by the prices per unit of the various commodities, the total on the left-hand side of the equation is an expression in money units. And, since on the right-hand side of the equation amounts of the various denominations of money are multiplied by abstract numbers representing average rates, the total here is also an expression in money units. Since M_1, M_2, etc., are expressed in the same denomination, we can combine them, and let M designate

the sum $M_1 + M_2 + \ldots + M_{10}$. The total currency M will have some rate of turnover per unit which we will designate by R for the unit of time taken. For the summation on the right-hand side of the equation we can therefore substitute the product MR. If we let

$$P \text{ stand for } \frac{P_1N_1E_1 + P_2N_2E_2 + \ldots + P_{10}N_{10}E_{10}}{N_1E_1 + N_2E_2 + \ldots + N_{10}E_{10}}$$

where the flows N_1E_1, N_2E_2, $\ldots$ $N_{10}E_{10}$ may be looked at as being abstract numbers used as weights; if we let

$$NE \text{ stand for } N_1E_1 + N_2E_2 + \ldots + N_{10}E_{10},$$

then the equation will be

$$PNE = MR.^{1}$$

In this equation P is the average price weighted by the flows of the various commodities. NE is the total flow of all commodities expressed as units of commodity.

Having obtained a statement of the quantity theory of prices for a hypothetical society, Dr. Kemmerer next proceeds to remove the restrictions and find how the statement would have to be changed by conditions as they exist in the United States at the present time. His treatment of the effect of "the other things" is admirable. The following is a summary:—

1. *Hoarding.* "Money therefore which is hoarded, and whose rate of turnover is zero, and likewise commodities which are not exchanged, have no numerical importance whatever in the price formula."[2]

2. *Barter.* "The exchange of goods by means of barter represents a demand for goods just as truly as does their exchange by means of money. Such exchanges affect the subjective valuations placed upon the goods by the various members of the community; . . . the changed subjective valuations above referred to would affect P through their influence upon E and R of the formula."[3]

[1] This form is derived by Kemmerer, but with different meanings given to the symbols.

[2] Kemmerer, p. 22. [3] Ibid., p. 25.

3. *Money in the United States at present.* Anything that acts as a medium of exchange of general acceptability is to be classed as money and included in M of the formula.[1]

4. *A Gold Monetary Régime.* "The possession by primary money of a bullion value essentially the same as its money value in no way exempts it from the general principle of price determination found to apply to other forms of money."[2]

5. *Credit.* Credit obligations may be classified as follows: "(1) where the obligation is in a form which is not negotiable, (2) where it is in the form of a negotiable instrument of postponed payment, (3) where it is in the form of a negotiable instrument payable on demand."[3] Credit obligations coming under heads (1) and (2), such as book credits and promissory notes, would have the same effect as barter. "The nature of the influence of checks upon prices is not essentially different from the influence of convertible government notes or bank notes."[4] Therefore, as Kemmerer states, the quantity theory equation will have to be changed by adding CR to MR and N_cE_c to NE and by substituting P_s for P where

C = volume of deposit currency exchanged for goods
R_c = average rate of turnover of such deposit currency
} = flow of deposit currency.

N_cE_c = the flow of goods exchanged for deposit currency.

P_s = the average price (weighted by the total flows) of all commodities sold for money and deposit currency.

The price equation then becomes

$$P_s = \frac{MR + CR_c}{NE + N_cE_c}$$ [5]

Does the new item, CR_c, denoting the flow of checks, vary independently of the money in circulation, M, or is it

[1] Kemmerer, p. 28. [2] Ibid., p. 60. [3] Ibid., p. 68.
[4] Ibid., p. 73.

[5] A similar form was derived by Irving Fisher in The Rôle of Capital in Economic Theory, Economic Journal, vii. p. 518.

a function of the money in circulation? Kemmerer supports the proposition that, "other things equal, the circulation of checks is a function of the monetary circulation."[1] "Assuming a given state of credit development, and a fixed amount of business, the proportion of deposit currency to bank reserves is a function of business confidence; and, business confidence remaining the same, an increase in the monetary circulation is accompanied by a proportionate increase in bank reserves and in the deposit currency which they support; a decrease in the monetary circulation has the opposite effect."[2] This conclusion is the result of an analysis of banking operations, which analysis is as convincing as it is clear.[3]

The quantity theory is a verbal statement of the price equation, and may be given as follows: *Conceive* the rapidity of circulation (R), the ratio of the flow of checks (CR_c) to monetary circulation (M), and the flow of commodities ($NE + N_cE_c$) to remain the same, general prices (P_s) will then vary in proportion to the monetary circulation. The truth of the price equation, however, is not dependent upon the assumption that certain terms be constants. All of the terms entering into the equation vary with time, although they may not vary independently of each other. With this understanding the price equation is inevitable. As to the *amount* of elasticity of the several variables and as to the correlation existing between pairs of variables entering the equation, there are very few data available, and consequently there is great difference of opinion among economists. The accumulation of statistical data bearing upon these points would seem to be a condition precedent to the further advance of price theory.

[1] Money and Prices, p. 78. [2] Ibid., p. 87.

[3] The subsequent statistical test given in this paper shows that facts bear out the theory.

II.

If we could obtain the average price level by weighting the prices of the individual commodities by the flows of such commodities for money and checks for a given year, if we could obtain the average amount of money in the country expressed in the money unit, if we could obtain the actual average rapidity of circulation per unit, if we could obtain the actual flow of checks and the actual flow of commodities for money and checks, and if these quantities should be substituted in the price equation, an identity should result. As a matter of fact, the flows of the various commodities cannot be obtained, the flow of checks can only roughly be estimated, and the flow of commodities for money and checks cannot be distinguished from the flow of commodities for commodities, or barter. It would, nevertheless, be both interesting and valuable to make a test of the price equation with such data as are available. Kemmerer now sets before himself the task of testing the equation by the statistics of actual business conditions.

Even among those who agree as to the statement of the quantity theory there is much difference of opinion as to the magnitude of the effect of the variations of the quantity of money upon prices. Professor F. M. Taylor says, "Experience shows quite conclusively that, in actual practice, the value of money exhibits little tendency to vary inversely as its quantity. Either the power of changes in quantity is very slight or it is commonly neutralized by opposing causes."[1] Further, he says, "It is always possible to conceive changes in the quantity of money so great that they would effect opposite changes in its value. Consequently, the quantity doctrine furnishes a convenient logical instrument for dealing with quite a number of money problems."[2] He doubts whether the increase of the output of gold following the Californian and Australian discoveries, or the recent increase following the South African

[1] Chapters on Money, p. 201. Published as a text-book in 1906.

[2] Ibid., p. 226.

and Alaskan discoveries, have caused a rise in prices.[1] In the same way Mr. A. S. Bolles expresses the opinion:[2] "The increase in the gold supply has no more effect in expanding business and raising prices than a thunder shower would have in raising the waters of the Atlantic."

On the other hand, Professor J. P. Norton holds not merely that the quantity theory is "a convenient logical instrument," but that the price changes at the present time are due primarily to the recent increase of the quantity of gold. Indeed, in his view, "So important is this subject that it would appear that Congress could well afford to appoint a commission to take testimony and to gather evidence in order to arrive at an adequate judgment as to the stability of the standard of value."[3]

The divergent views above quoted show the desirability of making a careful statistical test of the quantity theory. Kemmerer attempts to find the answer that facts give to the following questions:—

1. Do the bank reserves vary directly with the money supply?

2. Does the proportion of bank reserves to check circulation vary directly with the degree of business distrust existing in the country?

3. Is "a relative increase in the circulating media accompanied by a corresponding and proportionate increase in general prices and a relative decrease in the circulating media, by a corresponding and proportionate decrease in general prices," or, in the language of the formula, is

$$P_s = \frac{MR + CR_c}{NE + N_c E_c}$$ [4]

borne out by the facts?

Dr. Kemmerer appreciates the complexity of the problem and the meagreness of the data and that any study of the relation between money and prices at the present

[1] Chapters on Money, p. 209.

[2] Journal of Political Economy, January, 1907.

[3] Yale Review, November, 1906.

[4] Money and Prices, p. 139.

time must be far from final. He says, "In a study of the type here undertaken, which attempts to measure numerically the relative movements of such factors in the problem as the monetary and check circulations, the amount of business done, business confidence, and general prices, *very rough approximations* are all that can be expected. That such is all the following study pretends to give cannot be insisted upon too strongly. The 'other things' that must be equal, in order that the proportionality of relation between the monetary circulation and general prices expressed by the quantity theory may be true, are altogether too numerous, too complex, and too closely interrelated to permit of anything like exact quantitative formulation." [1]

Dr. Kemmerer uses statistics of the United States for the period 1879–1904 to make his inductive tests. The statistics of total bank reserves he obtains from the Reports of the Comptroller of the Currency. For the amount of money in each year (M) he takes the average of the total money in circulation at the beginning and end of that fiscal year as given in the Statistical Abstracts. The check circulation for each year he obtains by multiplying the total bank clearings [2] in each year by $\frac{1}{35}$. This ratio is the ratio between the estimated [3] total check circulation for 1896 and the bank clearings for that year. The rapidity of circulation of 47 per year he derives by dividing the estimated total money transactions in 1896 [4] by the money circulation of that year. The figures for the growth of business he finds by taking the simple average of index numbers of fifteen different series of statistics taken as

[1] Money and Prices, p. 90.

[2] The figures for yearly clearings of the United States were obtained from The Commercial and Financial Chronicle and Monthly Summary of Commerce and Finance of the United States.

[3] This estimate was based on reports made by a large number of banks of the country of the proportion of money and checks in deposits made by their customers, retail, wholesale, and others, on the settling day nearest July 1, 1896. Report of Secretary of Treasury, 1896, p. 456.

[4] He computes the total money transactions by taking one-third of the estimated check transactions.

representing the industrial activity of the year considered.[1] "The index numbers of business distrust are the simple averages of the corresponding indices for the proportion of concerns failing, and the average liabilities of concerns failing."[2] "The general index figures of prices and wages were computed by combining in a weighted[3] average the index figures for the prices of railroad securities (Commons), the index figures for the prices of wholesale commodities (Commons), and the index figures for wages (Department of Labor tables for twenty-five occupations)."[4]

All of the questions to be tested by the statistics collected are questions of correlation. Dr. Kemmerer makes the tests graphically by comparing the fluctuations of the two curves based upon the pair of series of statistics being considered. Such a method is well enough as a preliminary, but it tells nothing of the *extent* of the correlation between the series of figures being considered. The charts presented by Dr. Kemmerer do not answer the questions that he asks. A numerical measure of the correlation must be found if we wish to determine the *extent* to which the fluctuations of one series of statistics synchronize with the fluctuations of another series.

[1] Index numbers (with the average for the years 1883–84–85 as the base, of the following series of statistics are simply averaged to give index numbers of the growth of business:—

1. Population.
2. Tonnage entered and cleared.
3. Exports and imports of merchandise.
4. Revenues of Post-office Department.
5. Gross earnings from operation of railroads of the United States.
6. Freight carred by the railroads of the United States.
7. Receipts of the Western Union Telegraph Company.
8. Consumption of pig iron.
9. Bituminous coal retained for consumption.
10. Consumption of wheat.
11. Consumption of corn.
12. Consumption of domestic and foreign cotton.
13. Consumption of domestic and foreign wool.
14. Consumption of wines and liquors.
15. Market value of reported sales of the New York Stock Exchange.

[2] Money and Prices, p. 125.

[3] The weights are: 3 per cent. for stock; 8 per cent. for wages; 89 per cent. for prices.

[4] Ibid., p. 136.

The coefficient of correlation "serves as a measure of any statement involving two qualifying adjectives, which can be measured numerically, such as 'tall men have tall sons,' 'wet springs bring dry summers,' 'short hours go with high wages.'"[1] In the statistical test of the quantity theory we wish to determine whether high prices go with a high relative circulation. The method of measuring correlation which will be used here to test Dr. Kemmerer's statistics is applicable to cases in which the distribution of the items is either symmetrical or skew.[2] In order to measure the correlation, it is necessary to compute the arithmetic averages of the two series of statistics to be compared, the standard deviations, and the probable errors.[3] When there is perfect direct or positive correlation, the coefficient of correlation will equal $+1$; when there is perfect inverse or negative correlation (an increase in an item of one series coming with a decrease in the corresponding item of the other series), the coefficient will equal -1; when there is absolutely no correlation, the coefficient will equal 0.

The probable error gives a measure of the unreliability of any determination. Its meaning can be illustrated as follows. Suppose that we wish to determine the average height of the 22,000,000 men in the United States. We measure the heights of (say) 100,000 men chosen at random

[1] Bowley, Elements of Statistics, p. 320.

[2] Davenport, Statistical Methods, p. 42.

[3] The formulæ used are as follows:—

Arithmetic mean $(m_x)=\frac{\Sigma x}{n} \pm$ a probable error of $0.6745\frac{\sigma_x}{\sqrt{n}}$

Standard deviation $(\sigma_x)=\sqrt{\frac{\Sigma v_x^2}{u}} \pm$ probable error of $0.6745\frac{\sigma_x}{\sqrt{2n}}$

Coefficient of correlation $(r_{xy})=\frac{\Sigma(x-m_x)(y-m_y)}{n\sigma_x\sigma_y} \pm$ a probable error of $\frac{0.6745(1-r_{xy}^2)}{\sqrt{n}}$

Where x = numerical measure of one item
n = number of items.
V_x = algebraic difference of an item (x) from the arithmetic mean $(m_x)=x-m_x$.

from the whole group, and find the arithmetic average and the probable error of the arithmetic average, using the formulæ given in the foot-note. If the arithmetic average came out 5 ft. 7 in. and the probable error 1 in., it would mean that chances are even that the true average lies between 5 ft. 6 in. and 5 ft. 8 in.

The following table gives the correlation coefficients for various pairs of series of statistics for which Kemmerer has attempted to show the correlation by means of charts:—

TABLE SHOWING THE ARITHMETIC MEANS, STANDARD DEVIATIONS, COEFFICIENTS OF CORRELATION, AND PROBABLE ERRORS OF CERTAIN FINANCIAL STATISTICS.

(*Statistics from Kemmerer's Money and Prices, p.* 141.)

Statistics of	Period Covered.	Arithmetic Mean (m) ±Probable Error.	Standard Deviation (σ) ±Probable Error.	Coefficient of Correlation (r) ±Probable Error.
Money in circulation, inclusive of bank reserves	1879–1904	123.9±4.4	32.9±3.1	(Immediate)
Bank reserves	" "	150.9±7.1	53.4±5.0	+0.979±0.006
Business distrust	" "	85.8±1.9	14.3±1.3	(Immediate)
Ratio of bank reserves to check circulation	" "	89.6±2.7	20.3±1.9	+0.53±0.095
Business distrust	1879–1903	86.0±2.0	14.6±1.4	(Anticipatory)
Ratio of bank reserves to check circulation	1880–1904	89.9±2.8	20.7±2.0	+0.723±0.064
Relative circulation	1879–1901	107.0±1.7	12.1±1.2	(Immediate)
General prices	" "	91.3±1.5	10.5±1.1	+0.23±0.13
Per capita circulation (Statistical Abstract)	" "	23.1±0.32	2.24±0.23	(Immediate)
General prices (Kemmerer)	" "	91.3±1.5	10.5±1.1	−0.18±0.14

In the case of the correlation of bank reserves and money in circulation, inclusive of bank reserves, Dr. Kemmerer says, "There can be no question but that when due allowance is made for fluctuations in business confidence, the evidence . . . strongly supports the contention that there exists a close relationship between the amount of money in circulation and the amount of the country's bank reserves."[1] The coefficient of correlation comes out to be 0.979 ± a probable error of 0.006, which shows a most

[1] Money and Prices, p. 143.

remarkable correlation.[1] "When r is not greater than its probable error we have no evidence that there is any correlation, for the observed phenomena might easily arise from totally unconnected causes; but, when r is greater than, say, six times its probable error, we may be practically certain that the phenomena are not independent of each other, for the chance that the observed results would be obtained from unconnected causes is practically zero."[2]

The correlation coefficient between the index numbers of business distrust and the ratio of bank reserves to check circulation for the same years is 0.53 ± 0.095. When the index numbers of business distrust for one year are correlated with the ratio of bank reserves to check circulation the following year, the coefficient is 0.723 ± 0.064. As Dr. Kemmerer has suggested (but not verified), there is a closer correlation "when proper allowance is made for the time required for alterations in business confidence to exert their influence on bank reserves."[3] A very decided correlation is shown by the coefficient.

The final test of the quantity theory is the correlation between the figures for the right and for the left hand sides of the equation $P_s = \frac{MR + CR_c}{NE + N_cE_c}$. Upon examination of the curves plotted from the two series of statistics representing general prices and relative circulation (the left and right hand sides, respectively, of the price equation) Dr. Kemmerer says, "The general movement of the two curves

[1] For purposes of comparison the following correlation coefficients are given:—

1. Certain correlation coefficients for man:—

Right and left femur	0.96
(the highest in list of correlation of human measurements.)	
Weight and stature of Cambridge (England) female students,	0.721 ± 0.026
Weight and stature of Cambridge (England) male students,	0.486 ± 0.016
Forearm and stature	0.37
Age at death of consorts	0.22
Longevity of father and son	0.12

Davenport, Statistical Methods, p. 75 *et seq.*

2. Certain correlation coefficients of New York Money Market:—

Ratio of reserves to deposits and discount rates (780 weeks),	0.52 ± 0.01
Reserve and loan periods (immediate)	0.49 ± 0.07
Reserve and loan periods (after three weeks)	0.96 ± 0.01

Norton, New York Money Market, p. 96.

[2] Bowley, Elements of Statistics, p. 320.

[3] Money and Prices, p. 146.

taken as a whole is the same, while the individual variations from year to year exhibit a striking similarity."[1] However, the correlation coefficient for these series of statistics is only 0.23 and has a probable error of 0.13. The probable error is more than half the correlation coefficient, showing that the chances are even that the true coefficient lies between $+0.10$ and $+0.36$. The chances are about 4.5 : 1 that the true correlation coefficient lies between zero and $+0.50$. A small positive correlation is thus indicated. The contention of the quantity theorists is that, if we could obtain the exact measures, for a series of years, of all the items appearing in the price equation, the coefficient of correlation between the right and left hand sides would be $+1$. The smallness of the correlation indicated may have resulted either because the theory is in error or because the statistics are not adequate to test the theory. Whatever may be the fact, the statistics presented by Kemmerer do not demonstrate that general prices move in sympathy with relative circulation. However, he was under the necessity of assuming that the rapidity of circulation remained constant during the period and of estimating the volume of check transactions upon a basis of one day's business. He was also obliged to use index numbers based upon a miscellaneous lot of industrial statistics to represent the flow of commodities. In this substitution a correlation was assumed (altho necessarily) which, if not perfect, would seriously interfere with the correlation that he is attempting to measure. In this connection it should be noted that Kemmerer has obtained a correlation coefficient of 0.23 ± 13, whereas the coefficient of correlation of the per capita circulation figures[2] and general prices[3] is negative, being -0.18 ± 0.14.

In conclusion, it may be said that Kemmerer's investigations have shown that the questions to be answered must be answered by induction through the collection of adequate statistics. It is to be hoped that studies of this nature will be undertaken.

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[1] Money and Prices, p. 147.

[2] Statistical Abstract.

[3] Kemmerer's index numbers.

HOARDING IN THE PANIC OF 1907.

SUMMARY.

The panic of 1907 witnessed a premium upon money in New York lasting two months and rising as high as 4 per cent., 290–293.—The extent of hoarding on the part of the public is roughly indicated by the amount of money that disappeared from the banks, 293; and by the number of safe deposit boxes rented in New York and other cities, 294–296.—The banks of the South and West aggravated the situation by accumulating abnormal reserves, 296–299.

THE American panic of 1907 was surprisingly resemblant in several of its features to many that have gone before. It gave the lie directly to those who in recent years have contended that we should never again witness experiences like those of the memorable years 1837, 1857, 1873 and 1893. Quite frequently during the last decade sagacious observers have ventured the opinion that, as America had passed into a state of disciplined maturity, it was probable that her trade reactions in the future would be more like those of England and Europe, and would be initiated without the accompaniments of intense excitement and congestive fear that have characterized them in the past. The closing months of 1907, however, were marked by an outburst of fright as wide-spread and unreasoning as that of fifty or that of seventy years before, by the suspension of cash payments on the part of a very large proportion of our sixteen thousand banks, by the issue of private and unauthorized currency in multitudes of towns and cities, and by the appearance and continuance during two months of a considerable premium upon legal money.

In England no such general suspension of bank payments and no such premium upon money have occurred since the period of the Napoleonic wars; in France not since the

war with Prussia; and even in the dire vicissitudes of the latter experience the premium paid for coin rose only once to the level of 4 per cent., a surplus price which was frequently paid for currency in New York during November, 1907.

The unique dimensions of the recent panic among the experiences of the present generation render important the preservation for future study of all records concerning its phenomena. In the following pages are collated such figures as are available with regard to two of its most striking and most closely related features, the extensive hoarding on the part of the general public and of many banks, and the currency premium.

The currency premium made its first appearance in New York at the end of October, as the result of offers made by Western banks to pay a bonus for large blocks of money with which they hoped to recoup their reverses. These demands from out-of-town banks increased during the following fortnight of apprehension, and were added to by orders from large mill-owners and manufacturers who were not supplied with sufficient money to meet pay-roll demands. The reported premium in consequence rose on several occasions as high as 4 per cent. During these weeks, money brokers advertised regularly in the daily press the purchase and sale of currency, and their offices were described as thronged by all sorts and conditions of people bringing hoarded currency to sell in amounts ranging from $500 up to $10,000.

One peculiar effect of the money premium that ensued was registered in the quotations of foreign exchange rates. During a considerable part of November the country witnessed the unusual coincidence of enormous gold imports with quoted rates of exchange that would ordinarily have involved gold exports. Altho exchange on London sold as high as 4.88¾ for demand and 4.92 for cables, and tho it remained during much of the month above the normal gold export point, more than 63 millions of gold were actually imported from England and elsewhere.

As there was no common market for money, there were no regular quotations, and the prices in the following table have been compiled from scattered notes in the financial columns in the leading New York dailies:—

Date.		CURRENCY PREMIUM. High. %	Low. %
October	31	3	2
November	1	3½	2
	2	3	2
	3 (Sunday)		
	4	3½	3
	5 (Election Day)		
	6	4	2
	7	3½	3
	8	3	2
	9	3	–
	10 (Sunday)		
	11	3	2½
	12	4	3½
	13	4	3½
	14	3	2½
	15	2½	2
	16	2	–
	17 (Sunday)		
	18	3	2½
	19	2½	1½
	20	3	–
	21	3½	2½
	22	2½	1½
	23	1½	
	24 (Sunday)		
	25	1¼	1
	26	1¼	1
	27	–	¾
	28 (Thanksgiving Day)		
	29	–	½
	30	–	–
December	1 (Sunday)		
	2	1½	1
	3	2	–
	4	1¼	¾
	5	1½	¾
	6	1	¾
	7	1½	¾
	8 (Sunday)		
	9	–	–
	10	–	–
	11	1	–
	12	1	–
	13	1½	¾
	14	–	½
	15 (Sunday)		
	16	1½	1¼

Date.		*High.*	*Low.*
		%	%
December	17	¼	¼
	18	–	–
	19	1¼	–
	20	¼	¼
	21	–	–
	22 (Sunday)		
	23	–	–
	24	–	–
	25 (Christmas)		
	26	–	–
	27	¼	–
	28	¼	–
	29 (Sunday)		
	30	–	–
	31	No premium	

Of the extent to which hoarding occurred during the panic we have of course no statistical measure, but we have some rough indications. The reports of the Federal Comptroller for August 22 and December 3 show that the cash holdings of the national banks of New York City had declined by 43 millions, while those of the other national banks of the country had increased by 2 millions. In other words, the net loss of cash by all of the national banks of the country between the two reports reached a total of 41 millions. Meanwhile the government had increased its deposits of cash at the banks by about 72 millions; about 70 millions in gold had been imported by the banks; and about 50 millions had been added to the national bank circulation. Without taking into account the not improbable loss of cash by trust companies, State and private banks, and savings-banks, it would appear, therefore, that at least more than 230 millions of currency passed out of the banks and disappeared from sight between August and December. Put in tabular form, the account stands thus:—

Reduction of cash in national banks	$41,000,000
Government deposits of cash	72,000,000
Gold imports	70,000,000
Increase in national bank circulation	50,000,000
	$233,000,000

There is evidence from many cities that a large part of

this sum was taken from the banks by fearful depositors and stored away in the boxes of safe deposit companies. This occurred upon a most striking scale in New York. On October 26 the Astor Safe Deposit Company, at the request of Mr. J. P. Morgan, made a canvass of thirty-three of the principal safe deposit companies in that city, and found that from Tuesday to Friday of that panic week they had rented a total of 789 safes, or, as they estimated, about six times the usual number. The following table is collated out of information specially obtained by the writer from nine safe deposit companies in New York City and tells much the same story. Names of the companies represented are by request of their officials withheld.

NEW YORK SAFE DEPOSIT COMPANIES.
NUMBER OF NEW BOXES RENTED.

Week ending	A	B	C	D	E	F	G	H	I	Total of 9 Companies.
September 21	6	3	2	4	17	2	0	2	4	40
" 28	5	3	7	6	7	2	0	1	4	35
October 5	4	1	11	7	6	3	0	0	4	36
" 12	6	5	6	4	6	3	0	1	5	36
" 19	6	5	7	7	3	3	1	1	7	40
" 26	40	52	42	34	28	6	4	1	21	228
November 2	25	15	13	9	12	3	3	6	8	94
" 9	8	11	8	11	7	6	2	7	5	65
" 16	4	12	17	18	10	5	3	3	4	76
" 23	5	11	11	9	8	5	1	2	5	57

The general testimony seemed to indicate that this transfer of money was not attributable, as is so often implied, to women, clergymen, and other timid small depositors, but rather to large business interests that sought in this way to provide against any possible contingency which might prevent their meeting their regular obligations in the usual way. The following excerpt from a letter written by the president of the Mercantile Safe Deposit Company is characteristic: "We think most of it among our customers was done by business men and manufacturers who drew the money for immediate use for pay-roll and wage disbursements. The only other instance in which we have

heard of any money being placed in our vaults was a case in which a contract was to be carried out on a specified date, and the buyers held the money for about a week to avoid any trouble in securing it when it was wanted."

Officials of safe deposit companies in other cities displayed a greater reticence in answering questions about their affairs, and my evidence regarding the resort to deposit vaults is unfortunately less complete. Such replies as have been received indicate a less extensive transfer of cash to security boxes than in New York, probably for the reason that elsewhere the panic had not assumed very serious proportions before the banks suspended, and would-be hoarders were thus precluded from the possibility of obtaining cash. Nevertheless, in a number of Western cities so great were the demands upon safe deposit companies during the panic that formal arrangemen s were made between them not to rent boxes to persons desiring to lock up coin. In San Francisco on November 2 "an agreement was entered upon by all of the safe deposit companies of the city to rent no safe deposit boxes under any circumstances, and this agreement was in force until the 14th instant, when it was modified to the extent of renting boxes only to those who could show legitimate use for them." In St. Louis a similar, tho less formal, arrangement existed.

The following table showing specific weekly returns of boxes rented during the panic from three companies in St. Louis, two in Boston, two in San Francisco, and one in Chicago, tho very restricted in its range, is appended for such indications as it gives with regard to conditions in cities outside of New York. Many general reports from other companies in those cities reveal a similar state of affairs, altho returns were not made in a form capable of tabulation. They show in almost every case a very considerable increase in the rentals during the last week in October and the first three weeks in November; but in general the recorded increase fell far short of that observed in New York.

NUMBER OF NEW BOXES RENTED.

Week ending	St. Louis.			Boston.		San Francisco.		Chicago.
	A	B	C	A	B	A	B	A
September 21 . .	20	10	8	6	13	5	18	36
" 28 . .	29	37	14	10	15	4	22	41
October 5 . .	14	45	20	8	14	3	28	31
" 12 . .	24	24	26	8	15	3	20	35
" 19 . .	33	31	23	6	22	5	29	37
" 26 . .	53	71	36	14	27	4	48	62
November 2 . .	46	68	21	21	32	6	94	77
" 9 . .	46	68	33	15	23	2	–	94
" 16 . .	27	53	18	15	22	2	–	110
" 23 . .	32	50	26	13	25	–	–[1]	88

The report of the Comptroller of the Currency upon the condition of national banks on December 3 throws considerable light on the disappearance of money from New York, and on the hoarding of money in banks elsewhere during the panic. It shows that a large proportion of the banks outside of the three central reserve cities had accumulated excessive reserves of cash during the weeks when the panic was imminent, and then had protected their holdings from withdrawal in the course of the panic by the partial suspension of payments generally agreed upon throughout the country. The law establishes a minimum cash reserve for banks in the forty reserve cities of 25 per cent., of which only 12½ per cent. need be held in actual cash. It appears, however, that on December 3 a considerable number of the reserve banks were holding cash far in excess of their requirements. The banks of seven reserve cities (Washington, Galveston, San Antonio, Indianapolis, Lincoln, San Francisco, and Portland) held cash in the proportion of more than 20 per cent. of their deposit liabilities, while the banks of eighteen reserve cities in the West and South-west held cash to the extent of 15 per cent. or more of those liabilities. In several cities the total reserve, including balances with reserve agents, stood

[1] From November 2 to December 10 none rented by agreement.

above 35 per cent. (San Antonio, Indianapolis, Wichita, and Portland), and in one case (Galveston) they reached a percentage of 48.87. By comparing these figures with those reported by the Comptroller for August 22, it will be seen that with scarcely an exception a very large part of these surplus reserves had been collected in the interval between the two reports. The heavy dimensions of the reserves did not represent a traditionally conservative policy on the part of these banks, but a sudden and frightened effort to protect themselves from impending trouble.

The following table presenting the percentage of cash, and of total reserves to deposits in the banks of the eighteen reserve cities holding the largest proportion of cash on December 3, shows this situation most strikingly:—

	Per Cent. of Cash on Hand or in Redemption Fund to Deposits.		Per Cent. of Cash on Hand and due from Reserve Agents to Deposits.	
	August 22.	December 3.	August 22.	December 3.
Washington	14.9	22.1	27.68	32.41
Savannah	13	19.0	23.26	34.73
New Orleans	12.6	15.0	26.35	29.95
Fort Worth	12.8	15.0	21.55	33.45
Galveston	17.0	26.2	31.72	48.87
Houston	15.1	17.7	23.34	31.52
San Antonio	22.2	26.9	34.39	38.10
Waco	19.2	21.3	25.48	29.79
Indianapolis	14.6	20.8	31.81	37.25
St. Paul	12.8	15.5	29.63	31.51
Wichita	11.5	15.2	29.29	37.49
Omaha	15.8	21.2	30.10	34.33
Denver	16.9	18.3	36.60	31.38
Salt Lake City	16.3	18.7	27.07	31.13
Los Angeles	19.6	19.9	27.92	27.07
San Francisco	19.2	23.4	28.66	34.16
Portland	22.0	27.1	34.15	36.49
Seattle	16.8	17.6	31.78	27.23

In other than reserve cities the law requires the banks to hold a reserve against deposits of 15 per cent., of which two-fifths, or 6 per cent., must be kept in actual cash. In these banks the locking up of money proceeded before and during the panic upon a still larger scale. The Comp-

troller's report shows that on December 3 the outside banks reported a total reserve of 24.97 per cent., of which 263 millions, or 9.45 per cent., was represented by cash on hand. Comparing this total with the reserves of the same banks as reported on August 22, one finds an increase of more than 47 millions in the cash actually held by these banks. Moreover, this represented not only an increase in actual cash, but also an increase in the ratio of cash to deposit liabilities, for at the time of the earlier report the reserves of the outside banks amounted only to 24.24 per cent. of the deposits, and only 216 millions, or 8.25 per cent., was held in cash. To the country banks, then, must be charged a sudden increase in their cash holdings in the period when the panic was imminent, and when they should have been doing everything possible to relieve the general strain. Their gain of cash was almost equal to the loss of reserves suffered by the banks of the central reserve cities during the same period. The country banks in the course of these three months had secured control of 47 additional millions; the central reserve banks had lost about 58 millions. A large number of bankers, especially in the West and South, appear to have become panic-stricken along with the general public, and to have adopted the fatal policy of *sauve qui peut*. The strong institutions thus made it more difficult for the weak, for what is hoarded in the vaults of one bank under such circumstances is virtually taken out of another. In accumulating these abnormal reserves, the hoarding banks were largely responsible for the existence of a currency premium in New York; they contributed seriously to the general collapse of credit; and by reducing their accommodation for their customers they even made conditions worse than they need have been in their particular localities. The most extraordinary aspect of the matter is that the hoarding of reserves occurred for the greater part in places where cash payments were suspended by the banks and at a time when the banks were inundating their respective communities with illegal money substitutes.

The banks of the Southern, Western, and Pacific States were the worst offenders in this regard. As is shown by the table which follows, the banks outside of reserve cities in these regions held during the panic more than double the amount of cash required by the law. Tho only legally obliged to hold 6 per cent. of their deposits in cash, more than 15 per cent. was so held by the outside banks of Georgia, Alabama, Colorado, Oregon, and Nevada; more than 14 per cent. by the outside banks of Texas; more than 13 per cent. by the banks of North Carolina, Montana, Oklahoma, Washington, California, and Arizona; and more than 12 per cent. by the banks of South Carolina, Mississippi, Arkansas, Indiana, New Mexico, and Idaho. To the policy on the part of these institutions of holding large cash reserves no one certainly would object, but the appended tables show that this was not a policy that had been consistently maintained in the past. It was the result of precipitate action to save their individual selves at any cost in the very weeks when the panic was threatened.

The following table showing the percentage of cash to deposits, and of cash and balances to deposits, in the national banks outside of the reserve cities in different sections of the country on August 22, and on December 3, 1907, abundantly illustrates these statements:—

	Per Cent. of Cash to Deposits.		Per Cent. of Cash and Reserve Balances to Deposits.	
	August 22.	December 3.	August 22.	December 3.
New England States . .	8.7	9.8	23.46	26.45
Eastern States	7.8	9.1	21.14	20.96
Southern States	9.2	12.6	23.23	26.45
Middle States	7.5	10.0	24.79	24.15
Western States	8.1	12.1	31.09	32.11
Pacific States	9.0	13.5	28.27	29.70

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NOTES AND MEMORANDA.

A PROPOSAL FOR SECURING THE MAINTENANCE OF BANK RESERVE.

Whatever the amount of proportional "legal reserve" required for the National Banks of any class, under existing law or any future law; and whatever the general permission of law as to what may be "counted" as reserve (which properly should be "cash on hand" alone); and whatever the basis used in computing the particular reserve of any bank,—in any case and always there will be the problem of securing proper machinery for the maintenance of the reserve. There will be the difficulty of providing adequate means for the enforcement of the law. It is desirable in our political circumstances, furthermore, that this end be attained without lodging excessive discretionary power in the hands of officers of government.

The present law, respecting the matter under discussion, is unsound in principle and unworkable in practise. The fixed ratio of reserve should be repealed, except as a norm or general guide for administration. There should be a flexible limit in place of a dead-line; that is, the law should be enforced by means of a mild, automatic penalty. A standing law should be enacted, that whenever a bank "goes below the reserve," which it shall have a perfect right to do at any time and to any extent, it shall pay a tax of 6 per cent. (or some fixed sufficiently deterrent rate of tax) upon that amount of its total demand liabilities, which is accountable for the deficit in proportional legal reserve. This is an adaptation of the principle of the flexible limit of the tax-free normal and taxable abnormal "uncovered" note issue of the Reichsbank of Germany. If the bank "stays

below the reserve" for more than ten days (or some proper fixed number of days), the tax or fine shall be doubled: if for more than twenty days, it shall be trebled, and so on. This tax is to be a real tax kept by the government, and not to be subsequently refunded in whole or in part.

This proposed change from the existing system is an adaptation to our conditions of the theory and practise of the raising of the rate of discount by the Bank of England. That is the only way to handle a crisis properly. Since our banks might shift the tax or fine, together with perhaps a surcharge, upon their customers, provision should be made for their paying ultimately to the government any profits they may make while in the condition of "staying below the reserve." The tax proper should be collected promptly; and with this end in view, and as a necessary feature for making the scheme generally workable, the periods for which the progressive tax is computed should be one week, two weeks, etc. (or ten days, twenty days, etc.), corresponding to the times when the reports of the banks are due to be rendered to the supervising agency. If the disgorging of profits feature of the scheme just suggested is too drastic or too difficult of enforcement, it will be sufficient for the attainment of the chief end in view to compute the tax at any time (whether for the initial or the continuing offence) upon a sliding scale, multiplying the amount of the excess of credit expansion by one-fourth (or some larger fraction) of the rate of discount, whatever that may be. The standing tax imposed for purposes of revenue upon the circulation of the Bank of France is calculated upon the productive issue multiplied by one-eighth of the current rate of discount. There should be properly, of course, in no country a tax on the mechanism of exchange, simply for revenue.

If it is objected to the general project of law outlined above that our banks cannot be trusted, tho subject to fine, not to "run things into the ground," if they are left free to expand their credit to any extent they see fit, then I fall back upon the recommendation of getting at

once proper "general safeguards" and a greater concentration of banking in able and honest hands, so that we shall have bankers that can be trusted to do what bankers ought to do. To have a lot of incompetents in charge of our banks,—to take that for granted,—and then to attempt to tie them up, so that they cannot do much harm (which hinders them from doing good), is no "way out" or permanent cure of our troubles.

Our existing law of reserve, I repeat, is absolutely unworkable. In times of crisis, even in the times of lesser crisis, it is impossible to enforce a law of fixed dead-line of reserve. On such occasions, even when so handled that they pass off as disturbances of the lesser sort, banks are compelled, in order to relieve the strain, to keep on lending; and thus they increase their demand liabilities, and continue to fall more and more below a fixed per cent. of legal proportional reserve. This last will happen, even if there is no incipient panic causing a draining of lawful money from the absolute reserve; that is, even if there is no run proper. At any time of crisis, for the Comptroller of the Currency to exercise his excessively drastic powers under existing law would be to turn a small "squeeze" into a disaster. It is out of the question to enforce the law at such times: he must use "discretion," as it is mildly and euphemistically expressed. "So much the more then," one may naturally say, "should he hold the banks up sharply to maintaining their full quota of legal reserve in ordinary, normal times." But this cannot be done. Always it will be a matter of debate whether the times are normal enough, so that the law ought to be enforced, or not normal enough, so that the law ought not to be enforced. Moreover, individual banks can beg off and exert pressure and "pull." Some kinds of rules have to be automatic, or they will never work at all.

As a prominent feature of the numerous projects for an "emergency currency," so called, now being talked up in many quarters, it is usually proposed to tax the amount of the excess of bank circulating credit progressively. This

s a mistake in principle. Not the amount of "going below the reserve" (or, what is the same thing, expanding bank credit in any form to an extent that is regarded as abnormal), but the length of time a bank "stays below" (remains in a condition of over-expansion) should be taxed or fined progressively. It is not desirable that the banks should be timid about taking relief measures when such are needed, and they alone can be the judges both as to occasion and quantity. If there is need to act at all, they should be free to act with decision and with full amplitude of power, because it frequently happens in all departments of affairs (as, for example, in the case of the first Cleveland bond issues) that "small measures do not produce small effects: they produce no effect at all."

The foregoing suggestions apply obviously, *mutatis mutandis*, to the maintenance of the reserve of State banks and trust companies doing a banking business.

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THE CHIEF CAUSE OF THE FAILURE OF MUNICIPAL TELEPHONY IN GREAT BRITAIN.

Mr. A. N. Holcombe has recently discussed in this Journal[1] the reasons that led to the abandonment of municipal telephone service in Great Britain. Having explained the situation antecedent to the establishment of municipal exchanges, governed largely by the vacillating policy of the British Post-office, which might be fitly described as having played a game of "blind-man's-buff" both with the National Telephone Company and the municipal corporations, the author reaches the following conclusion: "the general abandonment of the municipal telephone undertakings (thus) cannot be adequately explained by any technical or financial weakness for which their managers

[1] In the issue for August, 1907, p. 645

are responsible, but that the explanation must be sought elsewhere."

The "elsewhere" in the opinion of the writer of the above, or the real cause of the failure of municipal telephone service, was its discouragement by the British government through the failure of the Post-office to enter into an active competition with the National Telephone Company, which, it will be remembered, was its lawfully created licensee and representative.

I do not desire to deny that the action of the British Post-office hurt the municipal telephone traders. But it served only to accentuate the troubles in which they found themselves and hastened the final step,—the abandonment of an unprofitable and losing business. In other words, the managers of the Post-office soon perceived that municipal telephone service was neither a financial nor technical success, and that a triple service would impede instead of assisting the development of telephony in Great Britain.

Mr. Holcombe's conclusion, that the general abandonment of the municipal telephone undertakings cannot be adequately explained by any technical or financial weakness for which the managers were responsible, is a new message to those who have watched and followed the rise and fall of the British municipal telephone service. The inception of that service was not as enthusiastic as might have been inferred from the charge of pronounced and general dissatisfaction with the existing system; for after the passage of the Act of 1899, when any municipality could have applied to the Post-office for a telephone, only 59 out of the possible total number (1,334) wrote to the Post-office for information, 41 after searching investigation abandoned the scheme, 13 took out a license, and only 6 of these actually proceeded to establish a telephone exchange. Of the latter Tunbridge Wells sold out to the National Telephone Company after an experience lasting but a little over a year.

Of Glasgow, as the largest municipality and making the largest investment and possessing weaknesses common

to the other five municipalities, the question may specifically be asked, what were the technical or financial weaknesses for which the managers of the municipal telephone business were directly responsible? Briefly, the answer is:—

(1) Errors in organization. The adoption of exchange system and equipment long discarded as inefficient by progressive telephone engineers.

(2) Errors in estimates and plans. Here the most glaring mistake was the underestimations of the cost of a subscriber's line,—an error due to the advice of the expert, Mr. A. R. Bennett, who in 1896 figured the average cost of a subscriber's line as £17, and changed later on to £18.16. In May, 1904, the cost per subscriber's line had grown to £34 in the Glasgow exchange.

(3) Errors in rates. Again relying upon the same expert, the municipalities adopted an annual flat rate of £5.5, about one-half that charged by the National Telephone Company. At the Glasgow Telephone Inquiry held by Sheriff Jameson (September 28–October 4, 1897) Councillor Alexander, member of the Glasgow Corporation Telephone Committee, deposed that:—

> Before making the application for a license, the Corporation Committee had laid before them expert information which satisfied them that an efficient telephone service could be supplied in Glasgow for £5 within a mile.

In response to a question by Mr. Ashe, M.P., if the committee intended to supply this telephone service without imposing any burden on the rates, the committee answered, "It is."[1]

(4) Errors in providing none or insufficient amounts for depreciation and sinking fund.

The managers were not without warning, for as early as December, 1901, when the Glasgow exchange had been in operation but seven months, the Marquis G. de la Touanne, a well-known telephone engineer of the French Telegraph

[1] London Electrical Review, October 8, 1897.

& Telephone Department, also a foreign member of the Institute of Electrical Engineers of London, wrote as follows to the London Electrical Review (December 13, 1901):—

> The statement of Mr. Provand in the Times of November 30, that Glasgow is earning a profit on £5.5 subscription leads us of the métier to seek further information, for no other large city has been able to maintain so low a rate. . . . £5.5 less 10% Post-office royalty leaves £4 14*s*. 6*d*. net. I take the ultimate capital cost per subscriber as given by Mr. Provand at £16, but I think no telephone manager will accept 3½% per annum as a sufficient depreciation. My experience is that if the service is to be kept up to the mark, the instruments and switchboards must be replaced every eight years, which means, say, 12% depreciation. . . . A little more arithmetic shows that every (Glasgow) subscriber who calls forty-seven times daily uses up his subscription price in operator's wages alone.
>
> Then we have also management, technical staff, repairs, rent, lighting, heating, and all the multifarious expenses of a large business enterprise still to come. But that is not all. The subscriber who calls 20, 40, or 80 times daily costs more than £16 in plant. He may cost 25 or 50, and the depreciation on that head is 12%, making with interest 15%. The £5 subscriber will thus cost about £7 per annum for interest and depreciation, say one and one-half times his subscription fee. . . .

Let us now consider the several sorts of error more in detail.

(1) Errors in organization. Immediately after the passing of the statute known as the Telegraph Act (1899), the Corporation of Glasgow, which in 1893 had asked the Postmaster-General for a license, renewed its request for an exchange to embrace the whole of the city of Glasgow and four outlying districts, covering approximately 143 square miles. This license was granted March 1, 1900, and (a fact which should be well borne in mind) at the Corporation's own desire it was made terminable December 31, 1913.

Immediately thereafter the Corporation, under the chairmanship of ex-Bailie James Alexander, an ardent advocate of and believer in municipal telephone service,

organized a telephone department and appointed Mr. Alfred R. Bennett chief engineer. By his advice the committee adopted what is commonly known among United States telephone engineers as the Law or call-wire system, in which each subscriber does his own ringing up. As operated in Glasgow, a maximum of twenty subscribers used one wire in common for giving their orders to an operator who, with a receiver held to the ear, watches for calls and makes the desired connection, leaving, however, the ringing up of the party called to the calling party. Omitting a lot of technical troubles inherent in such a system, it is evident to the layman that one line fault might affect as many as twenty subscribers. The common call wire left means of signalling at the mercy of irresponsible persons who considered it a joke to hamper operating work as much as possible. Moreover, whenever the insulation of a subscriber's line became even slightly defective, his line was inoperative.

The Law system was well known in the United States, where it had been in use in several large exchanges, noticeably Philadelphia and St. Louis. On account of its technical defects it was speedily superseded by the common battery system, with which the Philadelphia exchange was reconstructed as early as 1897. Ever since the Law system has been obsolete in the United States.

It took but two years to demonstrate the inefficiency of the Glasgow plant. Driven by general complaints of bad service, the Telephone Committee, as early as March, 1904, let it be known that a general change of the system was under contemplation.[1] To carry out the reconstruction, the Telephone Committee at the next meeting of the Corporation recommended that they be authorized to borrow an additional £250,000.

The reconstruction of the exchange became so imperative and required such large unremunerative additional investment that the Telephone Committee[2] (July, 1906) recommended the sale of the undertaking to the Post-office for

[1] London Electrician July 8, 1904. [2] Ibid., July 6, 1906.

£305,000, the actual expenditure at that date being £360,000. In spite of considerable political pressure the Postmaster-General refused to pay more than £305,000, and added that he could not keep even that offer open for a long time.[1]

That the inefficiency of the plant was one of the main causes that drove the enterprise on the shoals is corroborated by the remarks of Mr. James Alexander. In moving the adoption of the recommendation to sell the telephone undertaking, he said:—

> Another objection to the Corporation continuing to work the telephone service was that it would be necessary to apply to the Secretary of Scotland for power to borrow at least £100,000 in order to make necessary alterations on the switchboard and to carry on the system and meet the capital expenditure necessary in view of the increased number of subscribers. . . . At present the Postmaster-General would acquire all the plant of the undertaking, but if the Corporation continued till 1913 the latter would buy only such plant as was suitable for actual requirements at that time of the Post-office. They must therefore keep in view the fact that if they did not now sell to the Post-office, the Postmaster-General in 1911, when he acquired the entire National Company's undertaking, . . . might say to the Corporation that the greater portion of their plant was not suitable for the actual requirements of the Post-office at that date, and that therefore he was not going to acquire it."[2]

(2) Errors in estimates and plans. As has been stated heretofore, the municipal expert had figured at first the cost per subscriber or subscriber's line at £18.16. This appears from the evidence given by Mr. Bennett, in June, 1898, before the Select Committee on Telephones.[3] In spite of the firm persuasion of the municipal expert, the actual cost per subscriber's line after two years' operation of the exchange had risen to £35,[4] exceeding the original estimate by nearly 100 per cent. And at that time the

[1] London Electrician, July 13 1906. [2] Ibid., July 13 1906.

[3] See the Minutes of Evidence taken before the Select Committee on Telephones June 14, 1898

[4] London Electrician March 11, 1904

Telephone Committee was already seriously considering the reconstruction of the obsolete system!

On May 31, 1905, the London Electrician published a complete analysis of the Accounts of the Glasgow Corporation Telephone Department from 1901 to May 31, 1904, showing that the capital account stood at £350,273, and remarked that "the capital expenditure has, therefore, risen to £36.13 per subscriber, as against £35.8 on May 31, 1904. This increase is intrinsically small, but if the matter is looked into close it is more significant."

(3) Errors in rates. The biggest feather in the municipal telephone cap has always been the offer of a low flat annual subscription. Indeed, without this it is very doubtful whether even the Scottish rate-payers would have taken kindly to the novel experiment. No one person has more persistently advocated low flat rates and asserted that these are remunerative to municipal exchange work than Mr. Bennett, and it is due to his advice that Glasgow adopted the £5.5 flat rate for unlimited use.

Referring to the first annual report of the Glasgow Telephone Committee (September 11, 1903) Mr. Russell seriously warned his fellow-members:—

> Last year's working expenses reached £21,000, making a total expenditure of £47,000 per annum. Now last year's revenue was £35,000, and assuming that they could increase this year's revenue by £5,000 without any increase in the working expenses, they would only bring this year's revenue up to £40,000, leaving a deficiency of £7,000 per annum. Mr. Bennett in Hull, which was a much less expensive place to telephone than Glasgow, recommended the Corporation to make some such annual charge as £5.15 or £5.17, but the Corporation of Hull were going to charge £6.6. It must be evident that it was quite impossible to continue supplying the telephone at the present rental, except at a serious loss to the rate-payers. He advised an advance to £6.6 or £8.8 per annum instead of £5.5 as at present.[1]

Again, at the March meeting of the Glasgow Telephone Committee (1904) the subject was forced by Mr. Russell upon the unwilling ears of his fellow-members, the speaker

[1] London Electrician, September 11, 1903.

affirming that "the accounts had been kept in a way that even the auditors, for their own credit, had to protest against it."[1] A few months later (February, 1905) the palpable inefficiency of the plant made a new loan for reconstruction imperative, and here Mr. Bruce Murray came to the front, exposing the situation:[2]—

> The whole method adopted by the Committee from the day they began had been one of secrecy from both the Corporation and the public. . . . They expected to distract attention from the gross inaccuracies of their preliminary estimates and from the fact that the *£5 rate was not paying.*

The same urgent demand that the Telephone Committee "should immediately give notice of an increased rate" to avoid a serious loss on the undertaking was reiterated by Mr. Russell at the meeting of the Glasgow Corporation (September, 1905), and, as usual, went unheeded.

Finally, in July, 1906, came the denouement. The London Electrician (July 13, 1906) editorially commented on the sale of the exchange as follows:—

> From the reports that have now come in, it appears that the Corporation has been in a difficult position. . . . From the negotiations that have taken place it appears that the Glasgow Corporation have a deep-rooted objection to anything in the shape of a private monopoly. . . . It is a question, however, whether the objection is worth paying for; at least heavily. The purchase price to be given by the Post-office for the telephone system is £305,000, involving the Corporation in a loss of about £15,000, whereas the National Telephone Company seems to have made an offer to buy the system at such a price that no loss would fall on the Corporation. But the idea of the municipal telephones forming part of a private monopoly was not to be tolerated, ... and the Corporation are to sell at a loss.[3]

There is but one other fact worth mentioning, that the Postmaster-General refused point blank to bind himself to continue in future the low flat rate, the great drawing card of the Municipal Telephone Committee, the corner-stone of the enterprise.[3]

[1] London Electrician, March 11, 1904.
[2] Ibid., February 3, 1905.
[3] Ibid., September 14, 1906, p. 869.

(4) Errors in providing none or insufficient amounts for depreciation and sinking funds. That a body of Town Councillors, entirely unacquainted with the intricacies of managing a telephone exchange service, should have erred in neglecting to provide a proper depreciation is not astonishing, though the expert adviser would have done well to instruct the Telephone Committee. On the other hand, it was Mr. Bennett who decided on the period for which the sinking fund should be calculated. At the Glasgow Telephone Inquiry (October 5, 1897) he was asked by Mr. Salvesen, the attorney for the Corporation:—

"What was the sinking fund which you had in view to cover?"

Answer.—"It was intended to cover the capital expenditure at the end of twenty-one years."

Q. by Mr. S.—"But the license had only fourteen years to run?"

Answer.—"But it is not regarded as probable that at the expiry of the license the Corporation's plant would become valueless. It is not at all certain that the Post-office would refuse to take over the Corporation's plant at a reasonable charge."

As a matter of fact, the license, as has already been mentioned, at the request of the Corporation, had been made terminable December 13, 1913. In spite of this the Telephone Committee wrote down the enterprise on the basis of a thirty years' sinking fund.[1] The necessity of a proper depreciation and sinking fund was clearly pointed out by Bailie Burrell, at the discussion of the first Annual Report of the Telephone Committee (September, 1903).[2] He called attention to that clause in their license which contained the conditions of purchase by the Post-office of the plant of the licensee December, 1913. The Postmaster-General bound himself to buy only such plant as would be suitable for the actual requirements at the expiration of the license. The speaker then asked the pertinent question:—

Were the Government, for instance, likely to take over the switchboards, which, as the engineer informed them, had a life of but 10 years? The Corporation had exactly 10 years of their license to run. The life of the instruments might also be well placed at 10 years.

[1] London Electrician, March 11, 1904. [2] Ibid., September 11, 1903.

But the cost of their present switchboard and instruments was £80,000, and for this they could not reasonably expect to get anything from the Government. Figuring in other similar items, the total amounted to £101,000 for which not a single farthing might be received at the sale of the plant. Deducting this from the Capital Value £271,000 left £170,000, and how much of that sum might the Government find suitable in 1913? By that time the plant would be 10 years old. Taking the average at 11 years, and applying a depreciation but 3% over 11 years, this meant a reduction of 33%, and deducting one-third as depreciation (57,000) left £113,000, and this amount they might expect to receive from the Government in 1913. Consequently, they should write off between 1903 and 1913 in some way the difference between the cost of the undertaking £271,000 and the amount they were likely to receive. In other words, they should write off £158,000 or £15,800 on an average for 10 years. The accounts for the year showed that they had but £9,800. How then could they do that out of the profits of the undertaking? Surely the time had come when either a depreciation fund ought to be started or a much more adequate amount be placed to reserve.

Such sane counsel fell upon deaf ears, the chairman of the Telephone Committee replying "that all they were called upon to do was to write down, by sinking fund, by depreciation, or by reserve, a sum sufficient to meet such depreciation as would exist in the opinion of the representatives of the Government when the time for selling came."

From the above it is evident that up to September, 1903, the Telephone Committee had not seen fit to charge the accounts of the enterprise with one cent of depreciation. The London Electrician (October 23, 1903, p. 3) editorially referred to this grave error, both in the case of the Hull and the Glasgow municipal exchanges:—

The Hull Corporation should write off heavy sums for depreciation, sufficient to pay off the greater part of its capital by 1911. But if it does this it will be difficult, each year, to make both ends meet, and the undertaking will become a burden on the rate-payers . . . This difficulty has been evaded for the present in Glasgow, for instance, by writing off nothing for depreciation (in fact there the capital account was even swelled by including in it the cost of canvassing), but evidently this is merely deferring the day when the rates will be called upon to pay the cost of an unsuccessful experiment.

When the Glasgow Telephone Committee issued the Third Annual Report of the undertaking for the year ended May 31, 1904, the auditors felt compelled to state in their certification as to the correctness of the accounts, "The foregoing Capital and Revenue Accounts and Balance Sheets are correct, subject to the question of the sufficiency of the provision for depreciation."[1]

After the issuance of the Annual Report of the Glasgow Telephone Committee for the year ended May 31, 1905, the last report prior to the sale of the municipal exchange, the London Electrician published a complete analysis of the accounts of the Glasgow Corporation Telephone Department. From this only a few lines need to be quoted: "Out of the balance of £20,746, £19,242 has to be paid as Interest and Sinking Fund, leaving a net balance of £1,504, which is all that is set aside as depreciation. This is less than ½% of the Capital Expenditure."[2]

As has already been stated, the inevitable result due to the failure of setting aside a sufficient annual depreciation and sinking fund was a dead loss to the tax-paying community of £55,000.

The Glasgow Telephone Committee up to the last moment refused to learn from the experience of expert telephone engineers. In the words of their chairman, they "regretted that the Chancellor of the Exchequer and the Postmaster-General had not seen their way to give the Corporation back every penny of their money, but if the Corporation continued till 1913 the Postmaster-General would buy only such plant as was suitable for actual requirements, . . . and then in 1913 (he) might say that the greater portion of their plant was not suitable for the actual requirements, of the Post-office at that date."[3]

It may now be left to the judgment of the reader whether the general abandonment of the municipal telephone under-

[1] The Corporation of Glasgow—Telephone Department—Capital Account and Balance Sheet, 31 May, 1904, p. 10.

[2] London Electrician, September 15, 1905, p. 867.

[3] Ibid., July 13, 1906, p. 515.

takings in Great Britain can or cannot be adequately explained by *any* technical or financial weakness for which their managers were responsible, and whether or not it is necessary to seek an explanation elsewhere. No doubt the shifting policy of the English government contributed to hasten the ultimate result, but every careful student of the origin and management of the municipal exchanges in Great Britain will be driven to the conclusion that, sooner or later, these enterprises were doomed to ruin on account of the technical and financial weakness with which they were launched.

VICTOR M. BERTHOLD.

NEEDHAM, MASS.

RECENT PUBLICATIONS UPON ECONOMICS.

Chiefly published or announced since November, 1907.

An asterisk prefixed to a title indicates a second and more detailed notice of a book announced in a previous number.

I. GENERAL WORKS. THEORY AND ITS HISTORY.

BECKER (J.). Das deutsche Manchestertum. Eine Studie zur Geschichte des wirthschaftspolit. Individualismus. Karlsruhe: G. Braun. 1907. pp. 142. 3 m.

CLARK (J. B.). Essentials of Economic Theory. New York: Macmillan Co. 1907. pp. 566. $2.

[The first part restates the author's "static" laws as set forth in his Distribution of Wealth. The later part gives a "brief and provisional" statement of dynamic laws in the form of chapters on the railroad problem, protection, arbitration, and the like current topics. The volume is expected to be available for class-room use as a supplement to existing text-books.]

COLSON (C.). Cours d'économie politique. Paris: Gauthier-Villars. 6 vols. 36 fr.

[Livre I. Exposé général des phénomènes économiques. Livre II. Le travail et les questions ouvrières. Livre III. La propriété des biens corporels et incorporels. Livre IV. Le commerce et la circulation. Livre V. Les finances publiques et le budget de la France. Livre VI. Les travaux publics et les transports (entièrement nouveau). A comprehensive and important work.]

FISHER (I.). The Rate of Interest: Its Nature, Determination, and Relation to Economic Phenomena. New York: Macmillan Co. 1907. pp. 461. $3.

[A work of the first importance, supplementing the author's book on Capital and Income, and setting forth an independent theory of interest. Part I. contains a concise survey and criticism of previous theories, Parts II. and III. the author's own views, Part IV. applications to related economic problems. An appendix gives mathematical formulations.]

GIDE (Charles). Principes d'économie politique. 11me édition. Paris: Larose et Tenin. 1908. 1 vol. 6 fr. 75 c.

GÜNTZBERG (B.). Die Gesellschafts- und Staatslehre der Physiokraten. Leipzig: Duncker & Humblot. 1907. pp. 159. 4 m.

[In Staats- und Völkerrechtl. Abhandl., edited by Jellinek & Anschütz.]

HAWLEY (F. B.). Enterprise and the Productive Process. New York: Putnams. 1907. pp. 480.

[A systematic presentation of

the author's theory of distribution, involving the risk theory of business profits and laying stress throughout on the importance of enterprise. Chapters at the end apply the principles to trade unions, trusts, and socialism.]

HUTH (H.). Soziale und individualistische Auffassung im 18. Jahrh., vornehmlich bei Adam Smith und Ferguson. Beitrag zur Geschichte der Soziologie. Leipzig: Duncker & Humblot. 1907. pp. 175. 4.40 m.

[In Schmoller's Forschungen.]

INGRAM (J. K.). A History of Political Economy. Second edition. New York: Macmillan Co. 1907. pp. 260. $1.50.

[A reprint, without change, of this well-known volume.]

LIEFMANN (R.). Ertrag und Einkommen auf der Grundlage einer rein subjektiven Wertlehre. Jena (Germany): G. Fischer. 1907. pp. 72. 2 m.

[The author distinguishes between product and income, criticises other German economists for confusing them, and sets forth concisely his own theory of value, which is supposed to differ from that resting on marginal utility.]

PHILIPPOVICH (E.). Grundriss der politischen Oekonomie. Band 2: Volkswirtschaftspolitik, 2 Teil. Tübingen: Mohr. 1907. pp. 404 9 m.

[This instalment concludes the author's Grundriss. It considers: (1) Transportation, chiefly railways; (2) Internal trade, under which head banks and exchanges are treated; (3) Einkommenspolitik, chiefly as to wages (workmen's insurance, methods of wages payments, strikes, housing problem), with a closing chapter on poor laws. The first volume of the Grundriss is now in its sixth edition; the first part of the second volume appeared in 1905.]

RAPAPORT (M. W.). Christian W. Dohm, der Gegner der Physiokratie, und seine Thesen. Berlin: Puttkammer & Mühlbrecht. 1908. pp. 143. 3 m.

ROSS (E. A.). Sin and Society. An Analysis of Latter-day Iniquity. Boston: Houghton, Mifflin. 1907. pp. 178. $1.

[Essays, designed to stir public opinion towards condemnation of evil practices, on new varieties of Sin, the Grading of Sinners, the Criminaloid, the Rules of the Game, and so on.]

SCHATZ (Albert). L'individualisme, économique et social. Ses origines, son évolution, ses formes contemporaines. Paris: Colin. 1907. pp. 600. 5 fr.

[Includes studies of writers as diverse as Dunoyer, Mill, Bastiat, Taine, Le Play, Renan, and Nietzsche.]

SCHMOLLER (G.). (Translated by Polack, L.) Principes d'économie politique. Deuxième partie, tome V. Paris: Giard et Brière. 1908. pp. 347. 50 fr.

SELIGMAN (E. R. A.). Principles of Economics. Third edition. New York: Longmans, Green & Co. 1907. pp. 756. $2.40.

[The chief change in this edition is the rewriting and expansion of the chapters on money and banking.]

SPRAGUE (R. F.). The True Nature of Value. Chicago: Univ. of Chicago Press. 1907. pp. 192. $1.

[The author, a business man, sets forth an exchange-of-services theory of value, reached without knowledge of Bastiat.]

STEPHINGER. Zur Methode der Volkswirthschaftslehre. Karlsruhe: G. Braun. 1907. pp. 132. 2.40 m.

[In Volksw. Abhandl. der badischen Hochschulen.]

UNDERWOOD (J. H.). The Distribution of Ownership. New York: Macmillan Co. 1907. pp. 220. $1.50.

[In Columbia University Studies. The topic is limitations on absolute ownership, whether as to slavery, land, or corporate

ownership; with a concluding chapter on the ethics of ownership.]

In Periodicals.

ASHLEY (W. J.). The Present Position of Political Economy. Econ. Journ., Dec. [Presidential address to the Economic Science and Statistics Section of the British Assoc. for the Advancement of Science, 1907. Highly controversial.]

BENINI (R.). Sull' uso delle formule empiriche nell' economia applicata. Giorn. degli Econ., Nov.

CARVER (T. N.). The Economic Basis of the Problem of Evil. Harvard Theological Rev., Jan. [Economic scarcity is at the root: thence flow all problems of morals and politics.]

COSSA. L' economia politica e il sistema delle scienze. Giorn. degli Econ., Nov.

EDGEWORTH (F. Y.). Appreciation of Mathematical Theories. II. Econ. Journ., Dec. [This instalment is on the applicability of the principle of marginal productivity to employers' income.]

MOORE (H. L.). The Efficiency Theory of Wages. Econ. Journ., Dec. [A note comparing the theoretical distribution of efficiency with that found in U. S. statistics of wages.]

PANTALEONI (M.). Una visione cinematografica della scienza economica (1870–1907). Giorn. degli Econ., Nov.

PEARSON (K.). The Scope and Importance of the Science of National Eugenics. Pop. Sci. Monthly, Nov. [A lecture delivered at Oxford University, explaining and illustrating the science, and urging laboratories and instruction in universities.]

SAKMANN (P.). Nationalökonomisches bei Voltaire. Jahrb. f. Nat. Oek., Oct.

SCHMOLLER (G.). Gustav Rümelin. Ein Lebensabriss des schwäbischen Staatsmannes, Statistikers, und Sozialphilosophen. Jahrb. f. Gesetzg., 1907, Heft 4.

SELLA (E.). Della necessità di unificare la terminologia economica. Giorn. degli Econ., Nov.

II. THE LABOR PROBLEM.

ALDEN (Percy, M.P.). The Unemployed. 2d edition. London: King. 1907. 2*s*.

ANDRÉ (A.). Les rétraites ouvrières en Belgique. Paris: Giard et Brière. 1907. 6 fr.

ANTOINE (Ch.). Cours d'économie sociale. 4me édition. Paris: Alcan. 1907. 9 fr.

AVES. (E.). Co-operative Industry. London: Methuen. 1907. 8vo. pp. 322. 3*s*. 6*d*.

BARNETT (GEORGE E.). A Trial Bibliography of American Trade-Union Publications. 2d edition. Baltimore: Johns Hopkins Press. 1907. pp. 139.

BRANOT (H.). Gewinnbeteiligung und Ertragslohn. Zur Geschichte und Kritik der Teorien über Teilname am Reingewinn. Dresden: Böhmert. 1907. pp. 322. 6 m.

BRY (Georges). Cours élémentaire de législation industrielle. 3me édition. Paris: Larose et Tenin. 1908. 10 fr.

GEISSER (Alberto). Il problema delle abitazioni popolari. Torino, Italy: S. Latier & Co. 1908. pp. 101.

GIDE (Charles). Économie sociale. Third edition. Paris: Larose et Tenin. 1907. pp. 500. 5 fr. [Revision of a report upon labor conditions made for the exposition of 1900. Presents a good summary of French conditions and institutions.]

HOWARTH (E. G.) and WILSON (Mona). West Ham: A Study in Social and Industrial Prob-

lems. London: Dent. 1907. 8vo. pp. 444. 6s.
[The report of the Outer London Inquiry Committee.]

JOSEPHSON (E.). L'amélioration du logement ouvrier. Paris: Jacques. 1907. 3.50 fr.

KARWEHL (H.). Die Entwickelung und Reform des deutschen Knappschaftswesens. Jena: G. Fischer. 1907. pp. 180. 4.50 m.
[In Abhandl. d. Staatsw. Seminars zu Jena.]

KELLY (Edmond). The Unemployables. London: King. 1907. 8vo. 6d.

KESSLER (G.). Die deutschen Arbeitgeber-verbände. Leipzig: Duncker & Humblot. 1908. pp. 403. 8.80 m.
[Band 124 of Schriften des Vereins für Sozial-politik.]

KRITSKY (Mlle). L'évolution du syndicalisme en France. Paris: Giard et Brière. 1907. 4 fr.

LÖHNER (O.). Bauarbeiterschutz und Baupolizei in Bayern. Stuttgart: Cotta. 1907. pp. 147. 3.50 m.
[In Münchener Volksw. Studien.]

MERMEIX. Le syndicalisme contre le socialisme. Origine et développement de la confédération générale du travail. Paris: Ollendorff. 1907. 3.50 fr.

MEYER (O.). Die Massnahmen gegenüber der Arbeitslosigkeit in Halle a. S. Halle: Gebauer. 1907. pp. 134. 3 m.

MORIN (M.). Situation juridique des trade-unions en Angleterre. Paris: Giard et Brière. 1907. 5 fr.

RANOUX (H.). Les lois ouvrières mises à la portée de tous. Paris: Cornély. 1907. pp. 312. 2 fr.
[A résumé of French social legislation.]

SAGORSKY (S.). Die Arbeiterfrage in der südrussischen Landwirtschaft. Munich: E. Reinhardt. 1908. pp. 214. 6 m.

STRAUSS (P.) et BAULEZ (C.). Habitations à bon marché. Commentaire juridique de la loi du 12 avril 1906. Paris: Flammarion. 1907. 7.30 fr.

TAYLOR (F. W.). Études sur l'organisation du travail dans les usines. Paris: Dunod et Pinat. 1907. pp. 412. 10 fr.

WEIGERT (M.). Arbeitsnachweis, Einigungsamt, und Tarifgemeinschaft in Berliner Braugewerbe. Leipzig: Duncker & Humblot. 1907. pp. 264. 6.80 m.
[In Schmoller's Forschungen.]

In Periodicals.

ABBOT (Edith). Women in Manufactures. Journ. Polit. Econ., Dec.

ABBOTT (E.). Municipal Employment of Unemployed Women in London. Journ. Polit. Econ., Nov. [A disappointing experiment; few applicants, and those chiefly inefficient old charwomen.]

BERNSTEIN (Edw.). Trade Unionism in Germany. Contemp. Rev., Nov. [British trade unionism has ceased to lead the international movement of workers, being outnumbered by the German unions.]

BRUCCOLERI (G.). La legge sul consorzio obbligatorio per le miniere di Sicilia e l' attuale momento dell' industria zolfifera siciliana. Riforma Soc., Sept.–Oct.

CABIATI (A.). La politica industriale delle organizzazioni operaie. A proposito di un contratto di lavoro in Italia. Riforma Soc., Sept.–Oct.

ELIOT (Charles W.). The Canadian Act to aid in the Prevention and Settlement of Strikes and Lockouts in Mines and Industries connected with Public Utilities. McClure's Mag., Dec. [A description of the act, and an account of the cases to which it has been applied.]

GNAUCK-KÜHNE (E.). Die Arbeitszeit in Wasch- und Plättanstalten. Jahrb. f. Gesetzg., 1907, Heft 4. [Based upon a recent investigation of the Imperial Statistical Bureau.]

HENDERSON (C. R.). Industrial Insurance. Am. Journ. Sociol., Nov.

MASON (Fred B.). The Elberfeld System of Helping and Relieving the Poor. Econ. Rev., Oct.

MONTEMARTINI (G.). Un teorema di economia del lavoro. Giorn. degli Econ., Nov.

PEARCE (I. D.). Women and the Sweated Industries. Westm. Rev., Dec.

RUDLOFF (H. L.). Durchschnittliche Monatslöhne der landwirtschaftlichen Arbeiter in Frankreich Ende 1904. Jahrb. f. Nat. Oek., Dec.

SEAGER (H. R.). The Legal Status of Trade Unions. Polit. Sci. Quart., Dec. [A consideration mainly of the Taff Vale case, and favorable judgment on the recent legislation; with suggestions at the close for administrative supervision of trade unions.]

SELLERS (Edith). Foreign Remedies for English Poor Law Defects. Nineteenth Cent., Nov.

SMITH (H. B. Lees). Economic Theory and Proposals for a Minimum Wage. Econ. Journ., Dec. [The proposals do not stand the test of economic theory, but may be tenable on other grounds.]

VIRGILII (F.). L' insegnamento industriale e commerciale in Italia. Riforma Soc., Nov.

VIVIAN (Henry). Co-partnership in Housing. Westm. Rev., Dec. [A description of an English society which proposes to promote the building of houses, and to distribute surplus profits among tenants in proportion to rents paid.]

ZIMMERMANN (W.). Der Arbeitstarifvertrag im Deutschen Reiche. Jahrb. f. Gesetzg., 1907, Heft 4.

III. SOCIALISM.

AUCUY (M.). Les systèmes socialistes d'échange. Préface de M. A. Deschamps. Paris: Alcan. 1907. 3.50 fr.

[Examines the systems of Owen, Proudhon, Vidal, Haeck, and Solvay.]

BAX (E. B.). Essays in Socialism New and Old. London: Richards. 1907. 8vo. 6*s*.

BEBEL (A.). Die Sozialdemokratie im deutschen Reichstage. Berlin: "Vorwärts." 1907. Per part, 1 m.

[These memoirs are appearing in parts: the second and latest instalment goes to 1876.]

BONOMI (I.). Le vie nuove del socialismo. Palermo: R. Sandron. 1907. 16mo. pp. 315. 3.50 l.

BOURGUIN (M.). Les systèmes socialistes et l'évolution économique. 3me édition revue et corrigée. Paris: Colin. 1907. pp. 542. 10 fr.

[More than 100 additional pages, largely devoted to municipal exploitation.]

COUDURIER (L.). Une ville sous le régime collectiviste. Paris: Plon-Nourrit. 1907. 3.50 fr.

DAVID (A.). Socialisme chinois. Le philosophe Meh-Te et l'idée de solidarité. London: Luzac. 1907. 4to. pp. 185. 2*s*.

GUYOT (Y.). Sophismes socialistes et faits économiques. Paris: Alcan. 1907. 3 fr.

KAUTSKY (K.). Sozialismus und Kolonialpolitik. Eine Auseinandersetzung. Berlin: "Vorwärts." 1907. pp. 80. 1 m.

LAFARGUE (Paul). The Right to be Lazy and other Studies. Chicago: C. H. Kerr & Co. 1907. pp. 164.

MACDONALD (J. R.). Socialism. London: Jack. 1907. 8vo. pp. 134. 1*s*.

[Social Problems Series.]

MALLOCK (W. H.). A Critical Examination of Socialism. New

York: Harpers. 1907. pp. 310. $2.

[Based on lectures given in the United States for the National Civic Federation, but with revision and additions. A vigorous criticism. Most stress is laid on the failure of socialists to admit the importance of directing labor and the need of stimulating it.]

MARX (Karl) and ENGEL (Frederick). Manifesto of the Communist Party (translation). Standard Socialist Series. Chicago: C. H. Kerr & Co. 1908. pp. 65.

MARX (Karl). Revolution and Counter-revolution, or Germany in 1848. Chicago: C. H. Kerr & Co. 1907. pp. 192.

MONTE (Robert Rives). Socialism: Positive and Negative. Chicago: C. H. Kerr & Co. 1907. pp. 150.

NEWTE (H. W. C.). The Master Beast. Being a true account of the ruthless tyranny inflicted on the British people by socialism, A.D. 1888–2020. London: Rebman. 1907. 8vo. pp. 256. 3s. 6d.

PUECH (J. L.). Le Proudhonisme dans l'association internationale des travailleurs. Paris: Alcan. 1907. 6 fr.

SPARGO (John). Capitalist and Laborer and Modern Socialism. Chicago: C. H. Kerr & Co. 1907. pp. 122.

UNTERMANN (Ernest). Marxian Economics. (International Library of Social Science.) Chicago: C. H. Kerr & Co. 1907. pp. 252.

In Periodicals.

BORTKIEWICZ (L. von). Wertrechnung und Preisrechnung im Marx'schen System. III. Archiv f. Sozialw., 1907, Heft 3.

CROZIER (J. B.). A Challenge to Socialism. Fortn. Rev., Jan.

ENSOR (R. C. K.). The International Socialist Congress. Albany Rev., Oct. [A review of the proceedings at the Stuttgart Congress.]

HOGG (Walter). Herbert Spencer on Socialism. Westm. Rev., Oct.

JERROLD (Laurence). France and Socialism. Fortn. Rev., Nov. ["In no country is socialism so much of a household word and such a political power, yet probably in none is it less of a household thing and less of a social power."]

KENNEDY (J. C.). Socialistic Tendencies in American Trade Unions. Journ. Polit. Econ., Oct. [Various causes have led to a marked growth of these tendencies in recent years.]

STRACHEY (J. St. Loe). The State and the Family. Nat. Rev., Dec. [An argument against socialism based on the alleged effects of a socialistic régime upon the family.]

WALTER (Karl). Socialism in Italy. Econ. Rev., Oct. [A brief article.]

IV. LAND AND AGRARIAN PROBLEM.

CREANGA (G. D.). Grundbesitzverteilung und Bauernfrage in Rumänien. Duncker & Humblot. 1907. pp. 216. 5.40 m. [In Schmoller's Forschungen.]

GUTKEIT (P.). Die Bodenreform. Ein dogmengeschichtlich-kritische Studie. Leipsig: Duncker & Humblot. 1907. pp. 148. 3 m.

JOWANOWITSCH (K.). Die Heimstätte und die Unangreifbarkeit des ländlichen Grundbesitzes. Eine sozial-oekonomische Studie. Tübingen: H. Laupp. 1907. pp. 130. 2.50 m.

KOMPERT (P.). Kritische Betrachtungen über Bodenreform. Vienna: Manz. 1907. pp. 149. 3 m.

LE BLOND (M.). La crise du Midi. Paris: Fasquelle. 1907. 3.50 fr.

MAUER (H.). Das landwirtschaftliche Kreditwesen Preussens,

agrargeschichtlich und volkswirtschaftlich betrachtet. Stuttgart: F. Encke. 1907. pp. 213. 5.50 m.
[In Staatsw. Abhandl. des Seminars zu Strassburg.]

MEAD (E.). Irrigation in Northern Italy. Part 2. London: Wesley. 1907. 8vo. pp. 86. 3s.

MOMMEJA (F.). À travers le Midi. Avril-Octobre 1907. Paris: Roustan. 1908. 3 fr.
[An examination of the crisis of 1907 in the vine-growing regions.]

NEPPI MODONA (L.). Alcuni fattori della rigenerazione economica in Irlanda, e le condizioni della proprietà rurale e della cooperazione agricola in alcune provincie italiane. Florence: B. Seeber. 1907. 8vo. pp. 168. 5 l.

SCHLOTTER (P.). Die ländliche Arbeiterfrage in der Provinz Westfalen. Leipzig: C. L. Hirschfeld. 1907. pp. 230. 6 m.
[In Abhand. des Seminars zu Münster, ed. by Heckel.]

In Periodicals.

CUNNINGHAM (W.). Back to the Land. Econ. Rev., Oct. [Points out, effectively, the weaknesses of the Small Holdings Act as a solution of the agricultural problem.]

DALLA VOLTA (R.). La riforma agraria nell' Irlanda. Riforma Soc., Nov.

EVERSLEY (The Rt. Hon. Lord). The Evicted Tenants (Ireland) Act. Fortn. Rev., Dec.

KAYSER (E.). Weinbau und Winzer im Rheingau. Ein Beitrag zu den Agrarverhältnissen des Rheingaues. II. Jahrb. f. Gesetzg. 1907, Heft 4. [The article closes with a good account of the co-operative movement among the wine producers.]

LEDERER (E.). Bodenspekulation und Wohnungsfrage. Archiv f. Sozialw., 1907, Heft 3.

MINISTÈRE DE L'INTÉRIEUR. Dénombrement de la population, 1906. Paris: Berger-Levrault. 1907. pp. 900. 6 fr.

PRICE (H. C.). Farm Tenancy, a Problem in American Agriculture. Pop. Sci. Monthly, Jan. [Shows that the most fertile lands are coming to be owned by landlords and farmed by tenants.]

SCHRÜFFER (A.). Der gegenwärtige Stand der Bodenzinsfrage in Bayern. Ann. des Deutsch. Reichs, 1907, 11.

WEBER (A.). Beiträge zur Frage der Bodenspekulation und ihrer Gewinne. Erwiderung. Jahrb. f. Gesetzg., 1907, Heft 4.

UNSIGNED. Die Entwickelung des Preisniveaus in den letzten Dezennien und der deutsche und englische Getreidebedarf in den letzten Jahren. Jahrb. f. Nat. Oek., Dec.

V. POPULATION AND MIGRATION.

In Periodicals.

FAIRCHILD (H. P.). Distribution of Immigrants. Yale Rev., Nov. [A criticism of Professor Willcox's paper on this subject in the Quarterly Journal of Economics. The present writer believes that the evidence is still strong that immigrants tend to congest in cities.]

GUILFOY (W. H.). The Death-rate of the City of New York as affected by the Cosmopolitan Character of its Population. Pubs. Am. Stat. Ass., N.S. No. 80, Dec. [A positive contribution towards the analysis of our foreign-born population.]

VI. TRANSPORTATION.

BUNAU-VARILLA (P.). Le détroit de Panama. Documents relatifs à la solution parfaite du problème de Panama. Paris: Dunod et Pinat. 1907. pp. 205. 10 fr.
[Criticises the first three years of American administration.]

DUNMORE (Walter T.). Should Ship Subsidies be offered by the Government of the United States? Boston: Houghton, Mifflin. 1907. pp. 137. $1.
[A prize essay in the Hart Schaffner and Marx series. A good general survey of the subject, with conclusions against subsidies, but in favor of some other measures.]

HENRY (J. D.). Thirty-five Years of Oil Transport: The Evolution of the Tank Steamer. London: J. D. Henry. 1907. 8vo. 21*s*.

HIMER (K.). Die Hamburg-Amerika Linie im sechsten Jahrzent ihrer Entwickelung, 1897–1906. Berlin: Eckstein. 1907. pp. 153. 10 m.
[In the main an illustrated advertising publication. The concluding parts give information on organization and financial results.]

JAPIOT (M.). Les chemins de fer américains. Matériel et traction. Paris: Dunod et Pinat. 1907. pp. 408. 12.50 fr.
[From the standpoint of an engineer.]

KENT (P. H.). Railway Enterprise in China. An account of its origin and development. London: E. Arnold. 1907. 8vo. pp. 316. 12*s*. 6*d*.

MERRITT (Albert N.). Federal Regulation of Railway Rates. Boston: Houghton, Mifflin. 1907. pp. 252. $1.
[One of the Hart Schaffner and Marx prize essays. A survey of the act and the commission, and proposal for a special court.]

MORETTE (A.). L'ouest. Faut-il racheter? Paris: Giard et Brière. 1907. 6 fr.

SOWRAY (J. R.). British Railway Finance. London: Stanford. 1907. 8vo. 1*s*.

THOMPSON (Slason). Cost, Capitalization, and Estimated Value of American Railways. Chicago: Gunthorpe-Warren Printing Co. 1907. pp. 188.
[A partisan discussion of slight value.]

WAGHORN (T.). Traders and Railways: The Trader's Case. London: E. Wilson. 1907. 8vo. pp. 246. 4*s*.

In Periodicals.

BRESCIANI (C.). Die Eisenbahnfrage in Italien. Archiv f. Eisenbahnwesen, Sept.–Oct. [A good summary of the present status of the Italian railroads.]

COBB (Frank M.). Reasonableness of Maximum Rates as a Constitutional Limitation upon Rate Regulation. Harvard Law Rev., Jan.

FAGAN (J. O). Confessions of a Railroad Signalman. Atlantic, Jan. [Declares that the major part of railroad accidents is due to failure of employees rigidly to obey the rules; and that discretion in this matter is tacitly permitted by the railroad company.]

GEIGEL (D. F.). Gegen die preussischen Schiffahrtsabgaben. Ann. des Deutsch. Reichs, 1907, 11.

GUILLERY (C.). Die Betriebssicherheit der Eisenbahnen. Archiv f. Eisenbahnwesen, May–June. [Statistics of railway accidents from the leading countries, classified and compared.]

HENDRICKS (B. J.). Great American Fortunes and their Making: Street Railway Financiers. McClure's Mag., Nov., Dec., Jan. [A somewhat lurid but in the main accurate history of the traction scandals in New York under the Whitney-Ryan-Elkins-Widener management.]

HEUBACH. Die wirtschaftliche Bedeutung der Binnenschiffahrtsabgabe. Jahrb. f. Gesetzg., 1907, Heft 4. [Defends the imposition of tolls.]

INAMA-STERNEGG (J. P.). Die neuen Seeschiffahrtsgesetze Oesterreichs. Jahrb. f. Gesetzg., 1907, Heft 4.

MONTAGUE (G. H.). The Transportation Phase of the Oil Industry. Journ. Polit. Econ., Oct. [A review of the Bureau of Corporations recent reports both as to railways and pipe lines, the trend being in defence of the Standard Oil Company.]

RIPLEY (W. Z.). Railroad Valuation. Polit. Sci. Quart., Dec. [A consideration of commercial and physical valuation, the operations of railway commissions, the trend of judicial decisions, the grounds for demanding physical valuation.]

SNOWDEN (Keighley). The Human Factor in Railway Accidents. Fortn. Rev., Nov. [A good brief discussion of the mental strain incident to locomotive running.]

TRICOCHE (N.). Le problème des chemins de fer aux États-Unis. Journ. des Écon., Dec. [A study of the rate law.]

UNSIGNED. Railroad Statistics and Review of Finances for 1907. Railroad Gazette, Jan. 3. [An analysis with graphic diagrams of the operating and financial results for the past year.]

VII. FOREIGN TRADE AND COLONIZATION.

BOSC (L.). Zollalliancen und Zollunionen. Berlin: E. Stande. 1907. pp. 365. 9 m.

[Begins with a theoretical part, proceeds to a history of customs unions, and finally to modern tendencies (Great Britain, United States, and Russia), and the proposed Middle-European customs-union.]

CARLES (G.). La Turquie Économique. Paris: Rivière. 1907. 3 fr.

CUNNINGHAM (W.). The Free Trade Movement. Second edition. Cambridge, Eng.: Camb. Univ. Press. 1905. pp. 212. 2*s*. 6*d*.

[The only change from the first edition, of 1905, is in the addition of two brief papers on "The Real Richard Cobden" and "Back to Adam Smith."]

DIEPENHORST (Fr.). Die Bedeutung der Ausfuhrunterstützungen der Kartelle, mit bes. Berücksichtigung der reinen Walzwerke. Leipzig: A. Deichert. 1907. pp. 54. 1.20 m.

DOMERGUE (J.). Libre-échange ou protection . . .? Étude sur la révision de notre régime douanier. Paris: Poussielque. 1907. 2 fr.

DURAND (A.). France et Turquie. Paris: Rivière. 1907. 1 fr. 25 c.

FISK (George M.). International Commercial Policies. New York: Macmillan Co. 1907. pp. xvi, 288. $1.25.

[A text-book, with brief and cautious chapters on protection and free-trade, and more detailed and valuable chapters on the mechanism of customs duties, —export, import, and transit duties, ad valorem and specific methods, administrative arrangements, commercial treaties, and trade-promoting institutions. The author is professor at the University of Illinois.]

KÜHN (H.). Der Ausfuhrzwischenhandel im Uebersee-verkehr. Berlin: F. Siemenroth. 1908. pp. 136. 3 m.

In Periodicals.

ASHLEY (W. J.). La conférence impériale brittanique de 1907. Rev. Écon. Intern., Dec. [Favors preferential tariffs within the empire.]

GAERTNER (F.). Der oesterreich-isch-ungarische Ausgleich. II. Archiv f. Sozialw., 1907, Heft 2.

GARVIN (J. L.). Preference or McKinleyism. The Truth about the Australian Tariff. Nat. Rev., Oct.

GORRINI (G.). Il risorgimento coloniale del Congo. Riforma Soc., Nov.

KOENIG (B. von). Le développement commercial, économique, et financier des colonies allemandes. Rev. Écon. Intern., Oct.

MILLER (P. v.). Der Transithandel Russlands im 19. Jahrhundert. Jahrb. f. Nat. Oek., Nov.

ROUSIERS (P. de). Les exportations des États-Unis, leurs origines et leur avenir. Rev. Écon. Intern., Dec. [An analysis of recent changes in American export trade.]

SWART (F.). Zwanzig Jahre deutscher Kulturarbeit, Tätigkeit und Aufgaben neupreussischer Kolonisation in Westpreussen und Posen, 1886–1906. Jahrb. f. Gesetzg., 1907, Heft 4.

UHRY (A.). La mise en valeur de l'Australie envisagée dans ses rapports avec le marché extérieur. Rev. Écon. Intern., Dec.

VIALLATE (A.). La politique commerciale du Canada, 1845–1907. Rev. Écon. Intern., Dec.

VIII. MONEY, BANKING AND EXCHANGE.

BOUNIATIVE (M.). Studien zur Theorie und Geschichte der Wirtschaftskrisen. Teil I., II. Munich: E. Reinhardt. 1907. pp. 195, 315. 4 m., 7 m.

[Teil I.: Wirtschaftskrisen und Ueberkapitalisation. Eine Untersuchung über die Erscheinungsformen und Ursachen der periodischen Krisen. Teil II.: Geschichte der Handelskrisen in England im Zusammenhang mit der Entwickelung des englischen Wirtschaftslebens, 1640–1840.]

DANY (A.). Manuel pratique des opérations commerciales et des documents commerciaux. Paris: Berger-Levrault. 1907. pp. 357. 5 fr.

[A text-book for commercial schools.]

HOFFMANN (Fr.). Kritische Dogmengeschichte der Geldwerttheorien. Leipzig: C. L. Hirschfeld. 1907. pp. 300. 8 m.

[A valuable work bearing particularly on Knapp's theory of money.]

MARCOSSON (I. F.). How to invest your Savings. Philadelphia: Henry Altemus Co. 1907. pp. 120. 75 cts.

[Popular articles reprinted from the Saturday Evening Post.]

PRION (W.). Das deutsche Wechseldiskontgeschäft, mit bes. Berücksichtigung des berliner Geldmarktes. Leipzig: Duncker & Humblot. 1907. pp. 312. 7 m.

[In Schmoller's Forschungen.]

ROSSI (B. C. De). L' ordinamento del credito fondiario in Europa e particolarmente in Italia: fondamenti economici, cenni storici, statistica, legislazione. Turin: Unione tipografico-editrice. 1907. 8vo. pp. 781. 16 l.

ROYER (P.). Les grands établissements de crédit dans l'Algérie et les colonies françaises. Paris: Michalon. 1907. 15 fr.

SOLTAU (O.). Die französischen Kolonialbanken. Strassburg: K. J. Trübner. 1907. pp. 173. 4.50 m.

[In Abhandl. d. Staatsw. Seminars zu Strassburg.]

In Periodicals.

ANCIAUX (M.). Les problèmes actuels de la circulation métallique et fiduciaire en Belgique. Rev. Écon. Intern., Nov. [Examines the persistent drain of gold and of five-franc silver pieces from Belgium to France, and the serious increase in bank-notes.]

DAVENPORT (H. J.). The Working of Restricted Credit. Journ. Polit. Econ., Jan.

GABIEL (G.). Les chèques et virements postaux en Suisse. Rev. Écon. Intern., Oct. [Describes also the Austrian and Hungarian methods.]

HEILIGENSTADT (C.). Der deutsche Geldmarkt. Jahrb. f. Gesetzg., 1907, Heft 4.

HEINEMANN (E.). Die Scheckfrage und das Trennungs-problem in Bankwesen. Jahrb. f. Nat. Oek., Nov.

KEMMERER (E. W.). An Agricultural Bank for the Philippines. Yale Rev., Nov. [The conditions which make such a bank desirable, and the U.S. act of 1907 for establishing one. The author of this paper has taken chief part in investigating the subject and bringing the legislation to pass.]

KNAPP (G. F.). Die Währungsfrage, vom Staate aus betrachtet. Jahrb. f. Gesetzg., 1907, Heft 4.

LAUGHLIN (J. L.). Currency Reform. Journ. Polit. Econ., Dec. [A discussion of pending proposals, and concluding suggestion that a "Commission of high order" might be put in charge of emergency issues.]

——. The Recent Bond Issues. Journ. Polit. Econ., Jan.

NOYES (C. D.). The Fall in the World's Markets. Forum, Oct.–Dec.

——. The Financial Panic in the United States. Forum, Jan.–March. [A narrative account.]

SCHMIDT (F.). Die französischen Aktienbanken. Zeitschr. f. d. ges. Staatsw., 1907, Heft 4.

SODA (Küchiro). Die neue Knappsche Geldtheorie und das Wesen des Geldes. Jahrb. f. Nat. Oek., Nov.

TIPPER (Henry). Bank Charter Act, 1844. Journal of the Institute of Bankers, Oct. [An examination of conditions in 1844 and in 1907, with suggestions for amendment of the act.]

WARSCHAUER (O.). Die Organisation des Scheckverkehrs in Deutschland. Jahrb. f. Nat. Oek., Nov.

IX. FINANCE AND TAXATION.

CHARPENTIER (C.). La progression dans les impôts indirects en Allemagne. Paris: Alcan. 1907. 5 fr.

GREEF (G. de). L'Économie publique et la science des finances. Paris: Alcan. 1907. 9 fr.

GROS (G.). L'impôt sur le revenu. Essai d'économie financière. Paris: Larose et Tenin. 1907. 10 fr.

HECKEL (M.). Lehrbuch der Finanzwissenschaft. 1 Band. Leipzig: C. L. Hirschfeld. 1907. pp. 525. 10 m.

[A systematic treatise in three volumes, the second and third of which are expected to appear within two years.]

KLOSE (W.). Die Finanzpolitik der preussischen Grossstädte. Berlin: F. Siemenroth. 1907. pp. 268. 5.50 m.

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[An excellent and exhaustive biography of one of America's best-known financiers. The author had access to Jay Cooke's private papers, and has used them freely.]

RIEMANN (E.). Die Wertzuwachssteuer und Umsatzsteuer in Breslau. Kommentar zur Steuerordnung v. 20. Juni, 1907. Breslau: W. G. Korn. 1907. pp. 92. 1.20 m.

UNITED STATES DEPARTMENT OF COMMERCE AND LABOR. Inheritance-Tax Laws. Washington: Government Printing Office. 1907. pp. 69.

[A convenient compendium.]

WEST (Max). The Inheritance Tax. New York: Columbia University Studies. 1908. pp. 249. [A second, revised and enlarged edition of this useful work.]

WUARIN (A.). Essai sur les emprunts d'états et la protection des droits des porteurs de fonds d'états étrangers. Paris: Larose et Tenin. 1907. 5 fr.

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ADAMS (T. S.). Separation of the Sources of State and Local Revenues. Journ. Polit. Econ., Jan.

BALIGAUD (A. von). Die projektierte Aufhebung der staatlichen und kommunalen Oktrois in Spanien. Fin. Archiv, 24, 2.

BROOKS (R. C.). The New Unearned Increment Taxes in Germany. Yale Rev., Nov. [An excellent account of those taxes, of their fiscal effects and relations to other taxes.]

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COHN (Gustav). Government and Public Finance. Econ. Journ., Dec.

COHN (I.). Government and Public Finance. Econ. Journ., Dec. [Remarks on public works as sources of revenue, with a prophecy for Germany of higher progressive taxes on the well-to-do.]

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———. Tax Legislation by Constitutional Amendment. Journ. Polit. Econ., Dec.

DES CILLEULS (A.). Vues et conséquences financières relatives à l'opération des domaines nationaux en France. Rev. de sci. et de lég. fin., V. 4.

GRENLICH (E.). Die finanzielle Belastung der Gesellschaften mit beschränkster Haftung. Ann. des deutsch. Reichs, 1907, 10 and 11. [A study of double taxation in income-tax laws of the German states.]

JÈZE (G.). Le budget au point de vue juridique. Rev. de sci. et de lég. fin., V. 3.

LE ROSSIGNOL (J. E.) and STEWARD (W. D.). Rating of Unimproved Land in New Zealand. Journ. Polit. Econ., Jan.

MANICKE (A.). Die deutsche Schaumweinsteuer. Fin. Archiv, 24, 2.

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ROCCA (E. P.). Lo sviluppo delle società per azioni e il nostro sistema tributario. Riforma Soc., Sept.–Oct.

TANGORRA (V.). La technica finanziaria come materia d' indagine teorica e di studi teorico-descrittivi. Giorn. degli Econ., Nov.

WEBER (Ad.). Ueber die Wertzuwachssteuer. Krit. Blätter, Nov., Dec. [Review of recent publications on the subject by one not disposed to favor this tax.]

ZWIEDINECK-SÜDENHORST (O. von). Der Abschluss der badischen Steuerreform. Fin. Archiv, 24, 2. [An account of the property tax established by the law of 1906.]

X. CAPITAL AND ITS ORGANIZATION: COMBINATIONS.

CARR (C. T.). Collective Ownership Otherwise than by Corporations or by Means of the Trust. London: Camb. Univ. Press. 1907. 8vo. pp. 138. 5*s*. [Yorke Prize Essay, 1905.]

DARWIN (L.). Municipal Ownership. London: Murray. 1907. 8vo. pp. 166. 2*s*. 6*d*. [Four lectures delivered at Harvard University, 1907.]

FAIRLIE (J. A.). Essays in Municipal Administration. New York: Macmillan. pp. 374. [A collection of essays, chiefly

reprinted, all of excellent quality. Economic problems are touched in those on Public Works Administration, Municipal Ownership, Electric Lighting in Detroit, Street Railways in Chicago, and Municipal Conditions in foreign countries.]

KNOOP (Douglas). American Business Enterprise. A Study in Industrial Organization. Manchester: The University Press. 1907. pp. 110.

[A report by a Gartside scholar of the University of Manchester, based on a journey of investigation. Well done, but not containing much new to American students.]

LANDER (A. E.). The Municipal Manual: A Description of the Constitution and Functions of Urban Local Authorities. London: P. S. King. 1907. pp. 300. 3*s.* 6*d.*

[Covers, among other subjects, "extra municipal powers," such as water supply, gas works, telephones, and the like, and finance and poor laws.]

MEYER (Hugo R.). The British State Telegraphs. New York: Macmillan Co. 1907. pp. 425. $1.50.

——. Public Ownership and the Telephone in Great Britain. New York: Macmillan. 1907. pp. 404. $1.50.

[In these volumes the author again reaches conclusions against public management. In that on the telephone, national and municipal administrations are roundly condemned. In that on the telegraph, most stress is laid on the pressure of the House of Commons to bring about lower rates and that of the civil servant to secure higher pay and slack discipline. Both volumes rest on painstaking use of the sources, and are to be reckoned with.]

NATIONAL CIVIC FEDERATION REPORT. Municipal and Private Operation of Public Utilities. 3 vol. New York: National Civic Federation. 1907. pp. about 2,500. $10.

[A noteworthy investigation by a commission of experts representing different points of view.]

RIESSER. Stand und Aussicht der Börsengesetzreform. Berlin: L. Simion. 1908. pp. 42. 1 m.

[In Volksw. Zeitfragen. A report to the German Bankers' Congress of 1907. The author is a professor of law.]

UNITED STATES DEPARTMENT OF COMMERCE AND LABOR. Commissioner of Corporations. Report of the Commissioner of Corporations on the Petroleum Industry. Part II. Washington: Government Printing Office. pp. 965.

[Considers prices and profits in the petroleum industry.]

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ARBUTHNOT (C. C.). The Factor System as related to Industrial Combinations. Journ. Polit. Econ., Dec. [A good review of the methods practised and the opinions of business men, with conclusion that the system is not open to serious objection.]

CONANT (Chas. A.). The World's Wealth in Negotiable Securities. Atlantic, Jan.

FORBES (Urquhart A.). The Water Supply of the United Kingdom. Quart. Rev., Oct. [Urges a treatment of the English water-system on scientific principles.]

MONTEMARTINI (G.). La politica municipale nei grandi centri urbani. Giorn. degli Econ., Dec.

SABATIER (C.). Le morcellisme dans l'industrie. Rev. d'Écon. Pol., Nov.–Dec. [Examines the reasons for the increase in small industries.]

ZARTMANN (L. W.). Control of Life Insurance Companies. Journ. Polit. Econ., Nov. [On the mode in which policy-holders may vote and affect management, with considerations of the recent legislation of New York.]

XI. ECONOMIC HISTORY.

BEER (George Louis). British Colonial Policy, 1754–65. London: Macmillan Co. 1907. pp. 340. 8s. 6d.

[The author has been a lecturer in history at Columbia University.]

BISHOP (A. L.). The State Works of Pennsylvania. New Haven: Tuttle, Morehouse & Taylor. 1907. pp. 148.

[A careful history, based on the sources, of the Pennsylvania state canals and railways, to their sale in 1858–59. The author is instructor in Yale University. The monograph is reprinted from the Proceedings of the Connecticut Academy of Arts and Sciences.]

BOGART (E. L.). The Economic History of the United States. New York: Longmans, Green & Co. 1907. pp. 535. $1.75.

[An excellent text-book for colleges and high schools, equipped with bibliographical aids, maps, good illustrations. The best book yet published on the subject.]

CASTA-LUMIO (L.). Étude historique sur les origines de l'émigration reglementée dans nos anciennes colonies de la Réunion, la Guadeloupe, la Martinique, et la Guyane. Paris: Larose. 1907. pp. 208.

FISCHER (Kurt). Eine Studie über die Elbschiffahrt in den letzten 100 Jahren, mit bes. Berücksichtigung der Erhebung der Schiffahrtsabgaben. Jena: G. Fischer. 1907. pp. 283. 7.50 m.

[In Conrad's Abhandl.]

GAFFAREL (P.). La politique coloniale en France de 1789 à 1830. Paris: Alcan. 1907. 7 fr.

KIESSELBACH (G. A.). Die wirtschaftlichen Grundlagen der deutschen Hanse und die Handelsstellung Hamburgs bis in die 2. Hälfte des 14. Jahrhunderts. Berlin: G. Reimer. 1908. 6 m.

[Announced.

KOCH (H.). Geschichte des Seidengewerbes in Köln vom 13. bis zum 18. Jahrhundert. Leipzig: Duncker & Humblot. 1907. pp. 139. 3.20 m.

[In Schmoller's Forschungen.]

LEICHT (P. S.). Studi sulla proprietà fondiaria nel medio evo. II. (Oneri pubblici e diritti signorili). Verona-Padua: Fratelli Drucker. 1907. 8vo. pp. 157.

MEYNIEL (S.). Un facteur de la révolution française. La querelle des impôts au Parlement français en 1788–1789. Paris: Giard et Brière. 1907. 5 fr.

MILIOUKOV (P.). La crise russe. Son origine, son évolution, ses conséquences. Paris: Libr. univ. 1907. 15 fr.

SALONE (E.). La colonisation de la Nouvelle-France. Étude sur les origines de la nation canadienne français. 2me édition. Paris: Guilmots. 1907. 7.50 fr.

SARGENT (A. J.). Anglo-Chinese Commerce and Diplomacy (mainly in the nineteenth century). Oxford and New York: Clarendon Press. 1907. pp. 344. $4.15.

[An excellent account of British trade with China, beginning with a sketch of the East India Company's rule, and proceeding chronologically to the present. The author is teacher at the London School of Economics.]

SMYTH (Eleanor C.). Sir Rowland Hill: The Story of a Great Reform. London: Unwin. 1907. 8vo. pp. 344. 5s.

ZEYSS (R.). Die Entstehung der Handelskammern und die Industrie am Niederrhein während der französ. Herrschaft. Beitrag zur Wirtschaftspolitik Napoleon's. I. Leipzig: Duncker & Humblot. 1907. pp. 292. 7 m.

In Periodicals.

BRAKEL (S. van). Die Entwickelung und Organisation der Merchant

Adventurers. Vierteljahrschr. f. Social- u. Wirtschaftsgesch., 1907, Heft 3.

CARO (G.). Probleme der deutschen Agrargeschichte. Vierteljahrschr. f. Social- u. Wirtschaftsgesch., 1907, Heft 3.

GYGAX (P.). Augsburg, das einstige Geldreservoir des Platzes St. Gallen, 1835–1850. Jahrb. f. Gesetzg., 1907, Heft 4.

HARMS (B.). Die Steuern und Anleihen im öffentlichen Haushalt der Stadt Basel, 1361–1500. Zeitschr. f. d. ges. Staatsw., 1907, Heft 4.

LEVY (H.). Englische Kartelle der Vergangenheit. II. Jahrb. f. Gesetzg., 1907, Heft 4. [A second instalment of this study.]

MÜLLER (T.). Geleitswesen und Güterverkehr zwischen Nürnberg und Frankfurt a. M. im 15. Jahrhundert. Vierteljahrschr. f. Social- u. Wirtschaftsgesch., 1907, Heft 3.

RACHFAHL (F.). Zur ältesten Sozial- und Wirtschaftsgeschichte der Germanen. Jahrb. f. Gesetzg., 1907, Heft 4. [A criticism of some points in the second edition of Brunner's Rechtsgeschichte.]

SCHACHNER (R.). Australien als selbständiger Produktionsstaat. Jahrb. f. Nat. Oek., Oct., Dec.

XII. DESCRIPTION OF INDUSTRIES AND RESOURCES.

BARKER (J. E.). Modern Germany. Her Political and Economic Problems. London: E. Smith. 1907. 8vo. pp. 592. 10*s.* 6*d.*

[2d and very greatly enlarged edition.]

CENTRO INDUSTRIAL DO BRASIL. O Brasil, suas riquezas naturas, suas industrias. Rio de Janeiro: M. Orosco & Co. 1907. pp. 551.

[A French translation of the introduction of this work has also been issued.]

CRONBACH (Else). Die oesterreichische Spitzenhausindustrie. Beitrag zur Hausindustriepolitik. Vienna: F. Deuticke. 1907. pp. 217. 5 m.

[In Wiener Staatsw. Studien.]

DEMANGEON (A.). L'industrie aurifère en Colombie. Paris: Dunod et Pinat. 1907.

FERNEHEM (M. de). Les richesses du Portugal. Paris: Dujarric. 1907. 1.50 fr.

FREEMAN (W. G.), CHANDLER (S. E.), and Others. The World's Commercial Products. Boston: Ginn & Co. 1907. pp. 391. $3.50.

[A valuable treatise on the economic plants of the world and their commercial uses, with many excellent illustrations.]

GOFFART (M. F.). La mise en valeur du Congo. L'immigration des capitaux privés. Gand: Gomaere. 1907.

[Examines the large investment of international capital in the region of the Congo.]

GROTEWALD (Chr.). Die Tabakindustrie: Rohmaterial, Technik, volksw. Bedeutung. Stuttgart: E. H. Moritz. 1907. pp. 152. 2.50 m.

——. Die Zuckerindustrie: Rohmaterial, Technik, volksw. Bedeutung. Stuttgart: E. H. Moritz. 1907. pp. 178. 2.50 m.

[Popular illustrated handbooks, in a series edited by this author.]

HAARMAN (H. J.). Die ökonomische Bedeutung der Technik in der Seeschiffahrt. Leipzig: W. Klinkhardt. 1907. pp. 114. 3 m.

[In the series of Technisch-volksw. Monographien, edited by L. Sinzheimer.]

HALLE (E., editor). Die Weltwirtschaft. II. Jahrgang, 1907. II. Teil: Deutschland. Leipzig: Teubner. 1907. pp. 291. 4 m.

[This second part, on Germany, appears earlier than Part I. (International Surveys) and Part III. (Foreign Countries). The

subscription price for all three parts is 12 m.]

KNAPMANN (K.). Das Eisen- und Stahldrahtgewerbe in Altena bis zur Einführung der Gewerbefreiheit. Leipzig: C. L. Hirschfeld. 1907. pp. 111. 2.60 m.
[In Abhandl. d. Seminars zu Münster, edited by Heckel.]

LEMBERGER (Hedwig). Die wiener Wäsche-industrie. Vienna: F. Deuticke. 1908. pp. 241. 6 m.
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LINSCHMANN (H.). Die Spiritusindustrie: Technik, Steuern, Monopole. Stuttgart: E. H. Moritz. 1907. pp. 86. 2.50 m.
[In the series of popular handbooks, edited by Grotewald.]

SCHUCHART (T.). Die volksw. Bedeutung der technischen Entwickelung der deutschen Zuckerindustrie. Leipzig: W. Klinkhardt. 1907. pp. 274. 5 m.
[In a series of technisch-volksw. Monographien, edited by L. Sinzheimer.]

THERY (E.). La situation économique et financière du Japon après la guerre de 1904–05. Paris: Eugène Rey. 1907. 3.50 fr.

WAGNER (Curt). Konserven- und Konservenindustrie in Deutschland. Mit Anhang: Upton Sinclair's "The Jungle." Jena: G. Fischer. 1907. pp. 120. 3 m.
[In Abhandl. des Staatsw. Seminars zu Jena.]

WATSON (W. Petrie). The Future of Japan. New York: E. P. Dutton & Co. 1907. pp. 389. $3.50.
[Considers, among other things, industrial and commercial conditions.]

In Periodicals.

BERNARD (F.). La Tunisie actuelle. Enquête économique et social. Rev. d'Écon. Pol., Oct., Nov., Dec.

HALLE (E. v.). The Rise and Tendencies of German Transatlantic Enterprise. Econ. Journ., Dec. [On the causes of Germany's general advance rather than on international trade.]

MACCHIORO (G.). Prolegomeni ad uno studio sulla distribuzione topografica delle industrie. Riforma Soc., Nov.

SAUTTER (E.). Le développement industriel et commercial du Japon et la main-d'œuvre japonais. Mus. Soc., Dec.

XIII. STATISTICAL THEORY AND PRACTICE.

FÜRTH (Henriette). Ein mittelbürgerliches Budgetbuch über ein 10 jähr. Zeitraum. Mit Anhang: Die Verteuerung der Lebenshaltung. Jena: G. Fischer. 1907. pp. 137. 3 m.

NINA (L.). Principî fondamentali di statistica. Turin: Fratelli Bocca. 8vo. pp. 182. 3.50 l.

SCHNAPPER-ARNDT (G.). Sozial Statistik. Vorlesungen über Bevölkerungslehre, wirtschafts- und moral Statistik. Für Gebildete und Studierende. Leipzig: W. Klinkhardt. 1907. pp. 664. 18 m.
[Edited by L. Zeitlin.]

In Periodicals.

BENEDUCE (A.). Della natalità e della fecondità. Giorn. degli Econ., Oct.

——. Le variazioni di mortalità secondo gli anni di età. Giorn. degli Econ., Nov.

GINI (C.). Contributo alle applicazioni statistiche del calcolo delle probabilità. Giorn. degli Econ., Dec.

GRAZIANI (A.). Correlazioni e causalità nei fatti economici. Giorn. degli Econ., Nov.

MOST (O.). Zur Methode, Technik, und neuesten Phase der ge-

werblichen Produktionsstatistik. Jahrb. f. Nat. Oek., Dec.

YVERNES (M.). La criminalité en Europe. Journ. Soc. de Stat. de Paris, Nov.–Dec. [A convenient résumé of recent statistics.]

ZIMMERMANN (F. W. R.). Die demographische Sektion des vom 23. bis 29. Sept., 1907, zu Berlin tagenden XIV. Internationalen Kongresses für Hygiene und Demographie. Jahrb. f. Nat. Oek., Dec.

——. Das internationale statistische Institut in seiner XI. Tagung zu Kopenhagen, 1907. Jahrb. f. Nat. Oek., Nov.

XIV. NOT CLASSIFIED.

ADLER (G. O.) and Others. Festgaben für Wilhelm Lexis zur 70. Wiederkehr seines Geburtstages. Jena: G. Fischer. 1907. pp. 373. 15 m.

[A collection of monographs by former students of Professor Lexis. Contents: G. Adler, Stirner's Anarchistische Sozialtheorie; O. Arendt, Ende des Währungsstreits; L. Bortkiewicz, Leibniz und die Diskontierungsformel; A. Manes, Die englische Einkommensteuer bis zu Pitt's Tode; G. Mayer, Lösung der deutschen Frage in 1866 und die Arbeiterbewegung; C. Neuburg, Römischer und deutscher Bergbau; W. Stieda, Auktionen; M. Kandt, Verschiedene Prämien Sparsysteme.

ANDRESON (N. P.). The Republic. Chicago: C. H. Kerr Co. 1908. pp. 282.

[International Library of Social Science.]

ASLANIAN (D.). Les principes de l'évolution sociale. Paris: Alcan. 1907. 5 fr.

DOWD (J.). The Negro Races. A Sociological Study. New York: Macmillan Co. 1907. pp. 510. $2.50.

[The initial instalment of a series of studies of races, in which three volumes are to be given to the negroes. The present volume, the first, treats of the Negritos, Nigritians, and Fellatahs; the second will deal with slavery and the slave trade; the third with other negro races. Economic aspects are among those considered.]

GARRIQUET (L.). Régime de la propriété. Paris: Blond. 1907. 4 fr.

LAYCOCK (F. U.). Motives of Mankind. A Study of Human Evolutionary Forces. London: C. N. Daniel. 1907. 8vo. pp. 422. 7*s.* 6*d.*

ROSS (E. A.). Social Psychology: A Source Book and Outline. (Announced.) New York: Macmillan Co.

[Historical.]

WATKINS (G. P.). The Growth of Large Fortunes. A Study of Economic Causes affecting the Acquisition and Distribution of Property. New York: American Economic Association. 1907. pp. 170. $1.

[A valuable investigation.]

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CAPUTO (L. A.). Di alcune quistioni economiche della Calabria. Giorn. degli Econ., Dec.

FORNASARI. Sulla statistica delle religioni. Giorn. degli Econ., Nov.

MICHELS (R.). Divagazioni economiche sulla funzione sociale del lusso. Riforma Soc., Nov.

RICCI (U.). L' economia politica nell' insegnamento secondario. Giorn. degli Econ., Nov.

VALYI (F.). Die französiche Soziologie der Gegenwart. I. René Worms. II. Emil Durkheim. Krit. Blätter, Oct., Nov., Dec. [These critical papers on contemporary French sociologists find in Worms' sociology fundamental errors, and take issue with Durkheim's psychology.]